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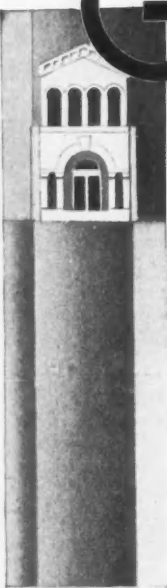
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VOLUME XXXIX

SEPTEMBER, 1933

No. 3

MALIGNANT DISEASE OF THE COLON*

By HARVEY B. STONE, M. D.
Baltimore, Maryland

THE greatest problem of clinical medicine at the present time is cancer. This is true of cancer in general. The problem becomes especially important in certain organs and parts of the body because of the relative frequency with which malignant disease involves these areas; and among such positions of election the colon occupies a prominent place. The successful cure of cancer anywhere depends upon the ability to destroy it completely, which usually means a wide removal of the growth and the surrounding structures. Obviously, such measures of treatment cannot be carried out in locations where vital structures would have to be sacrificed. It follows that growths in those areas which permit wide removal without interference with vital functions offer relatively favorable opportunities for cure, and among such favorable organs the colon must be counted, since it is possible to remove large portions of it without impairment of health or function. For these three reasons, then—the importance of cancer, the frequency with which it involves the colon, and the suitability of the colon for radical surgical removal—our subject is one that deserves emphasis.

IMPORTANCE OF EARLY DIAGNOSIS

In any discussion of cancer, primary importance is attached to early diagnosis, and this general rule applies as well to growths in the colon as to other parts of the body. The subject of diagnosis of malignant disease of the colon has already been treated by Doctor Bowen, so that only the most general reference on that phase of the subject will be made in this paper, the principal purpose of which is to discuss the matter of treatment. There are, however, certain well recognized and often emphasized points that, for the sake of completeness, should be mentioned. The first of these is the unfortunate absence of symptoms which may often be encountered in growths of the large bowel until the disease is far ad-

vanced. It is well known that in many cases the patient has no noticeable warning of ill health until acute obstruction suddenly develops. This silent growth not only renders early recognition difficult in many cases, but frustrates the success of popular campaigns to arouse the public to its danger. It is obvious that we cannot expect patients to present themselves for examination when they have no reason to believe that there is anything wrong with their health. The symptoms which are recognized as suggestive of disease of the large bowel, and which should arouse suspicion as to the possibility of cancer, may be catalogued briefly as follows: disturbances of intestinal function—gas pains, increasing constipation, distention and gurgling—palpable tumor, blood in the stool (either fresh or occult), anemia, loss of weight, and tenderness. It has been brought to the attention of the profession, notably by various publications from the Mayo Clinic, that there are certain differences in the symptomatology of growths in the right half of the colon and those in the left side. Thus, anemia is particularly apt to occur in tumors of the cecum and ascending colon. Indeed, a marked secondary anemia may be the only observable symptom for a considerable period of time, and the existence of such an unexplained anemia should direct attention toward the right side of the colon in efforts to explain it. On the other hand, obstructive symptoms are especially apt to occur when the growth involves the left side of the colon. In addition to the signs and symptoms that may be discovered by ordinary clinical examination, the x-ray provides an invaluable aid in diagnosis of this particular disease. Since that subject has been dealt with at length by Doctor Bowen, I shall content myself with one comment only: valuable as the x-ray is, there are certain cases in which the clinical signs and symptoms point strongly to a growth in the bowel which, for one reason or another, fails of demonstration by x-ray study. The writer has had several such experiences, and has formed the opinion that when the clinical evidence is strong for the existence of a growth, and the x-ray is unable to furnish support for this diagnosis, it is, nevertheless, the part of wisdom to explore the abdomen. In at least four such personal cases, a growth has been found.

* Guest speaker paper, read before the joint meeting of the Radiology and General Surgery Sections of the California Medical Association at the sixty-second annual session, Del Monte, April 24-27, 1933.

PATHOLOGY

In regard to the pathology of malignant disease of the colon, cancer is practically the only form of growth to be considered. It is true that sarcoma does occur, but it is so rare as to be a condition worthy of reporting only when encountered. There are three types of cancer to be noted—scirrhous, adenocarcinoma, and the less common variety variously known as colloid, gelatinous, or mucoid. Bleeding and anemia are more characteristic of adenocarcinoma, and obstructive phenomena of scirrhous, although these are not hard-and-fast distinctions.

TREATMENT

To pass to the main purpose of this paper, the subject of treatment of malignant growth in the large bowel falls naturally into two major divisions: those procedures which aim at radical cure of the disease and those which are designed for palliation alone. Each of these groups again is susceptible of division into those cases which are partially or completely obstructed when they first come for treatment, and those in which obstruction is not present. The first of these classifications to deal with are those tumors which are suitable for radical cure in patients without obstruction; and we proceed to consider the principles to be employed in this group.

Preoperative Preparation.—The first, and one of the most important matters to be dealt with in considering the treatment of nonobstructive cancer of the colon, is proper preoperative preparation. It is the practice of the writer to devote at least four or five days to this preparation, and if necessary a longer time. The patient is kept in the hospital, but not confined to bed. The diet is of the high caloric, low-residue type. Fluids with sugar in them are pushed. Mineral oil night and morning, a daily small saline laxative, and a daily soap and water enema are prescribed to clear the bowel thoroughly. A careful general physical examination is made, and the patient is grouped and matched for blood transfusion. If there is marked anemia, a transfusion of 500 cubic centimeters is given two days before operation, and in every case where a radical removal is done, a similar transfusion is given in the operating room toward the end of the operation. It is believed that this careful preparation has greatly improved the results of operative treatment. The writer has not employed the preliminary vaccination of the peritoneum described by Rankin, and cannot express an opinion as to its value. There has been increasing emphasis laid upon the desirability of preliminary colostomy in cases of cancer of the colon. D. F. Jones of Boston was among the first to insist upon the need of preliminary colostomy in cases of obstruction, or near obstruction from growth, and the truth and importance of his teaching have so impressed surgeons that some, like A. O. Whipple, have expanded the idea to cover practically all cases of colon cancer. The writer, whose opinion in this respect is supported by Rankin, does not believe there is any necessity to make a two-stage operation of all cases, and does not employ prelimi-

nary colostomy unless there is definite evidence of some degree of actual obstruction.

Operative Procedures.—At operation, under general or spinal anesthesia, the abdomen is explored through a suitable incision to determine whether the growth is operable for cure. If there is liver, distant lymph gland, peritoneal, or omental involvement, or direct extension too great for successful removal, the case falls into the inoperable group and will be discussed later. If there is no obstruction, and the growth is favorable for radical cure, resection is undertaken. It is not the purpose of this paper to detail the steps of operation, but to outline the principles employed. If the growth is on the right side of the colon, from the cecum to the hepatic flexure, the whole ascending colon is mobilized by division of the peritoneum lateral to it, and lifted entirely out of its bed. As it is raised, the peritoneum, blood vessels and glands mesial to it are freed from the retroperitoneal structures. This whole mobilized portion with the associated vessels and glands is then resected, and an anastomosis made between the ileum and the transverse colon. The basis of this operation is the removal of the whole right side of the colon, even though the growth itself may be small and not seem to demand such an extensive resection. Personal experience has shown better results by this method than by smaller resections with preservation of part of the ascending colon or the hepatic flexure. The same principle is employed with growths on the left side from the splenic flexure to the sigmoid. Here the anastomosis is done between the transverse colon and the sigmoid. The operation is more difficult on the left side because of high position of the splenic flexure. For growths in the transverse colon and the sigmoid, a sufficient segment of gut containing the tumor, with the associated mesentery and glands is resected, and the two ends anastomosed. Formerly the writer employed the Parker-Kerr aseptic end-to-end type of anastomosis, and found it a very satisfactory operative procedure. Three subsequent strictures, one in the transverse and two in the sigmoid, have led to its abandonment, however, except where scantiness or immobility of bowel makes a lateral anastomosis impractical. Where there has been no obstruction, and the operative technique has been carried out in a satisfactory manner, no enterostomy as a safety valve is made proximal to the anastomosis, although many other surgeons do this as a routine. In doubtful cases it is advisable. A final word about a particular operation—although this paper has avoided the discussion of detailed operations. The writer shares the views of Rankin and others on the undesirability of the original Mickulicz method of dealing with growths in the colon, and considers that where some such procedure is necessary, the Rankin modification, known as obstructive resection, is much to be preferred. The writer has had no experience with radium or x-ray in the treatment of growths in the colon, either as an adjunct to operation or alone, although he has used it extensively in inoperable growths of the rectum.

Surgical Treatment of Obstructions.—To take up next the surgical treatment of cases with obstruction, one proceeds along entirely different principles. Here it must be recognized that a complication of the growth (or obstruction) has become for the time paramount in immediate importance to the tumor itself. The elaborate preparation described above for unobstructed cases is reduced to the washing out of the stomach and the administration of intravenous glucose and saline solution. The abdomen is opened, a brief exploration made to discover, if possible, the exact location of the growth, and a cecostomy done with a good-sized tube unless the cecum itself is involved, in which case ileostomy is performed. If the patient recovers from the obstruction, the second definitive operation is undertaken two weeks or more later, and follows the lines indicated above for the radical cure of the disease. The cecostomy will close spontaneously in many instances after the removal of the growth, but occasionally a third operation may be required to close it.

There has been a great deal of interest constantly directed toward the cure of malignancies in the alimentary tract, and this very natural concentration upon a permanent end-result has been the predominant objective in the surgical measures adopted. As a consequence of this attitude, palliative surgery of growths within the abdomen has in practice generally been limited to the relief of obstruction. Obstruction, when it occurs in a segment of the alimentary canal that permits a short circuiting anastomosis, has been handled by operations of that type and in other regions, such as the lowermost part of the sigmoid and rectum, and the cardiac end of the stomach has been dealt with by making artificial openings to the exterior to permit either the introduction of food or the escape of fecal material. It is one purpose of this paper to awaken interest in the possibility of doing more good for the patient by bolder and more radical attack on the primary disease, even when there exists no hope of permanent cure.

REPORT OF CASES

To illustrate in a concrete way what the writer has in mind, a few cases that have been done within the last two or three years will be cited as illustrations.

CASE 1.—Carcinoma of the ascending colon. Patient was a man of fifty-four, markedly anemic, with much loss of weight and great constipation. Operation disclosed a large growth in the bowel and palpable glands extending along the vessels as high as the aorta in the region of the renal arteries. The right side of the colon with a few inches of ileum was resected, and an anastomosis done between the lower ileum and the transverse colon. Patient lived about two years and a half, and died finally with extensive abdominal carcinomatosis. During the interval, however, he had been able to resume his occupation as a shoemaker and made a notable, although temporary, gain in weight, strength, and blood count.

CASE 2.—Similar in all respects to the one just cited. Same type of operation was done. Patient died, however, from pneumonia on the sixth day after operation. Autopsy showed that there remained behind a number of glands along the aorta that were involved in carci-

noma, a condition which was known to exist at the time the operation was done. There have been two other cases of growth in the right side of the colon in which the principles involved, and the operation performed, were similar to these cases cited.

CASE 3.—Carcinoma of the splenic flexure of the colon. Woman of about sixty-three years of age, first seen with acute intestinal obstruction. Exploration revealed a small scirrhous growth in the splenic flexure and some nodules in the liver. A cecostomy was done for the immediate relief of the obstruction, and two weeks later the growth in the splenic flexure was resected, including practically all of the descending colon, and an anastomosis was made between the transverse colon and the sigmoid. The anastomosis leaked, and a fecal fistula developed with some breaking down of the second incision. The patient, however, survived this condition and lived for about three months, at which time she died rather suddenly with a circulatory collapse considered due either to an acute myocardial failure or coronary occlusion. No autopsy was secured.

CASE 4.—A man fifty-eight years of age, operated upon for obstructive symptoms in the sigmoid which was found to contain a carcinoma about the middle of the loop. The growth was resected with its mesentery as far as the inferior mesenteric vessels, but large glands that felt definitely malignant could be palpated considerably beyond the reach of operable removal. An end-to-end anastomosis was done between the two stumps of the sigmoid loop. Patient made an uninterrupted recovery, and is still living and well after two years.

CASE 5.—Woman of about thirty-five, similar in all respects to the case just cited, with a growth in the mid-sigmoid. This growth was removed with its mesentery by the Rankin obstructive resection method, but it was felt that glands beyond the reach of removal were definitely involved. A delayed anastomosis was done at a secondary operation, and this patient is still living and well after about two years.

There have been at least four or five other cases similar in all important respects to the last two.

COMMENT

It will be seen that during the last few years the writer has performed radical resections in a number of cases in which there was no expectation of permanent cure at the time the operation was performed. These cases all gave clinical evidence of the extension of the disease beyond the reach of radical removal, and in such cases it has been the general practice to do one of two things. First, if there seems no imminent danger of obstruction, to close the abdominal incision after exploring, and allow the conditions to remain undisturbed. Second, when obstruction seems imminent, to do some form of short-circuiting operation by anastomosis of the alimentary tract above and below the site of the growth. The reasons which induced departure from this customary plan of procedure are as follows: First, the desirability of removing the growth if that can be done without too formidable an operation. It is obvious that such removal will at once put a stop to the bleeding, ulceration, infection and absorption that are bound to continue from the surface of a gastro-intestinal cancer, even although a short-circuiting operation has been performed. It is evident that, if such an operation succeeds,

the patient will secure a much more pronounced beneficial effect in the quicker restitution of the quality of his blood, the freedom from absorption, the decrease in discomfort and pain, perhaps the disappearance of a palpable mass, and in the psychic benefit to be derived from the assurance that the growth has actually been taken out. Second, in these cases there is very little to lose. If our diagnosis be correct, such patients are going on to inevitable death in a fairly short time, and should some accident or misfortune take place as a result of the operative procedure, this inevitable outcome is simply anticipated by a short period of time. From the humanitarian standpoint, it may fairly be maintained that a patient who dies quickly after such an operation is more fortunate than one who lingers on for somewhat longer time, slowly dying with a growth in his abdomen. It seems to the writer, therefore, that his efforts to do more extensive palliative operations are entirely justified, both in theory and in practice, and he would urge that where inoperable malignancy in the gastro-intestinal tract permits of not too difficult removal, that the standard procedure should be resection since that affords the greatest measure of palliation. The distinct impression has also been obtained that life after such resections is not only more comfortable, but considerably longer. The underlying idea in this more aggressive palliative treatment of inoperable growths is the old and accepted principle of treating the patient and not the disease.

There is another type of malignancy of the large bowel in which resection is perhaps too formidable to be justified unless it carries with it the hope of a permanent cure. Such a situation is illustrated by carcinoma of the lowermost sigmoid, or of the rectum with, let us say, nodules in the liver. To remove such a growth is a major procedure in every sense of the word, and would leave the patient afterward with a permanent colostomy. This seems too much of a price to pay with too little gained in a case where cure cannot be hoped for. In these cases, the question of palliation resolves itself into provision of an outlet for fecal contents in case obstruction should develop. It is customary for the surgeon to try to estimate whether obstruction is threatening or will be long-delayed. If he thinks that obstruction is about to ensue, he will probably do a colostomy in the sigmoid above the growth. If, on the other hand, he believes that the patient's life may terminate from the disease before obstruction takes place, no colostomy will be performed. In such cases the writer has employed a device which does away with the necessity of trying to read the future. After the situation has been explored and hope of radical cure abandoned, a small left-sided McBurney incision is made. The sigmoid is drawn into this incision, so that a small cone of bowel, representing about one-fourth of its circumference, extends beyond the skin level. This protruding cone of bowel is fixed to the skin of the incision with a few silk sutures. The midline exploratory incision is then closed. The protruding portion of sigmoid soon becomes adherent to the abdominal wall, its serosa is rubbed off and re-

placed by a thin film of epithelium growing from the skin edges. The patient then has what resembles in every respect a small incisional hernia on the left side containing the attached sigmoid loop. Arrangements are now completed by which any development in the progress of the disease may be dealt with to best advantage. If obstruction never takes place, the patient is allowed to go to his end without the distress and inconvenience of a colostomy. On the other hand, if obstruction does occur, it can be relieved at once without any anesthetic or further operative procedure by simply plunging a knife into the protruding small portion of the sigmoid. In every case the maximum comfort and the minimum of pain, expense and worry, are provided for the patient. This procedure, which I have designated as precolostomy, I have used in a considerable number of cases of inoperable cancer of the rectosigmoid region, and have felt that it is a very considerable addition to the surgical resources in this field of work.

18 West Franklin Street.

THE FUTURE OF ANESTHESIOLOGY AS A MEDICAL SPECIALTY*

By CAROLINE B. PALMER, M. D.
San Francisco

WHAT causes have led to the equivocal position of anesthesiology?

Is the present trend for or against improvement?

Is anesthesiology a medical specialty?

If this specialty should be put on a strictly professional basis, would an adequate number of properly trained anesthetists be available?

Anesthesia, in the modern sense, dates from the demonstration of the anesthetic properties of ether in 1846, and shortly afterward of chloroform.

EARLY ATTITUDE TOWARD ANESTHESIA

From the beginning, the attitude of the medical profession of America toward this new and revolutionizing subject was different from that of England. This difference may be partly accounted for by the fact that for several years ether was the chief agent used in America, while chloroform early was favored in England. The relative margin of safety of these two anesthetics was, doubtless, one reason why in America it was believed that practically anyone could administer anesthetics, but in England this work was confined, almost from the start, to the medical profession.

In England, too, shortly after the introduction of anesthetics, the medical profession began to develop the science and art of anesthesia as a medical specialty. Snow's anesthetic research dates from about 1847. Snow was followed by Clover, and Clover by Hewitt. It was in the latter's era that the London Society of Anesthetists was formed, which ultimately became the Section on Anesthetics of the Royal Society of Medicine.

* Chairman's address, Anesthesiology Section of the California Medical Association at the sixty-second annual session, Del Monte, April 24-27, 1933.

Several things happened in England which gave anesthesia prestige: Queen Victoria put her seal of approval on Simpson's method of pain relief in childbirth; Clover anesthetized Napoleon III after his escape to England; and Hewitt administered an anesthetic to Edward VII, in recognition of which he was knighted.

ATTITUDE TOWARD ANESTHESIA IN AMERICA

Meanwhile, in America, the birthplace of anesthesia, physicians, medical students, and others were simply learning to do by doing, at the expense of patients, surgeons, and the entire medical profession. The natural result was that in our own country, anesthesia became the stepchild of the medical profession, and anesthesiology, born forty years later, is still suffering because of the inherited stigma.

The psychologic attitude of the medical profession toward the entire subject is puzzling.

It seems strange that among the wise physicians of that day, some did not reason that an agent powerful enough to carry patients to that mysterious region between life and death could not be foolproof.

Naturally, however, it was not long before anesthetics and anesthesia began to interest research workers; and in time, actual knowledge was gained, replacing to some extent mere opinion, prejudice, and the arrogance of ignorance. In the nineties, the Brooklyn Society of Anesthetists was organized, which later gave way to the New York Society of Anesthetists. In 1912, a group of medical anesthetists and research workers attempted to secure a section in anesthesia in the American Medical Association, but failed. The following year the American Association of Anesthetists was arranged as a separate organization; but this association, unfortunately, was conceived as a limited society of one hundred members—a fatal mistake.

DEVELOPMENT OF SOCIETIES OF ANESTHETISTS

In 1915 the Interstate Society of Anesthetists was formed by some forward-looking medical anesthetists, prominent among whom was Dr. F. H. McMechan, now our secretary-general; and from this organization were developed our present local, regional, and national societies of anesthetists, and the International Anesthesia Research Society.

The members of these various organizations are all working toward increased knowledge of anesthetic agents and improvement in clinical methods; to the end that patients may have the safest and least disagreeable type of anesthesia, and that surgeons may be unhampered in their work. Progress has been significant, and all of these things should lead to a degree of perfection in our specialty beyond anything as yet known. But there is another side to the picture.

Unfortunately, certain of the physicians who became interested in anesthesiology found the practical work too wearying, and in some instances turned the actual administration of anesthetics over to technicians. A considerable num-

ber of surgeons and hospital executives were quick to see the convenience and economic advantage of such an arrangement, and so the anesthetic technician became recognized.

NONMEDICAL ANESTHETICS

In other words, hundreds of nonmedical persons were and still are permitted to practice medicine. This seems like carefully cultivating an orchard and then allowing the fruit to be blighted. Of what avail the research, the hard work, unless we are to realize the benefit in safer and better anesthesia?

Even the convenience and economic advantage, which are the fundamental reasons for permitting the employment of anesthetic technicians, will not bear close scrutiny; but as this part of the subject is considered in another paper on our program, I shall say no more here than seems necessary.

Is it correct to say that these technicians are practicing medicine? No anesthesia can be safe unless the anesthetist can and does diagnose the patient's condition at every step of the way, and is competent to order supportive treatment if indicated. Can the technician do this? Not even those who sponsor anesthetic technicians make any such claim. What they do say is that the surgeon supervises the anesthesia, and that the technician simply carries out his orders. Is this possible? Can any surgeon do his work properly, and at the same time keep in mind the exact condition of the patient from minute to minute? The most that surgeons do in this respect is to ask occasionally, "What is the pulse?" and the chances are ninety-nine to one that the reply is not even heard. Others make a practice of saying at a certain stage in the operation, "The blood seems a little dark." Is this supervising the anesthesia? Anyone who has knowledge of the subject knows that it is not—that there is no such thing as a supervised anesthesia unless the one supervising gives the matter his entire attention. That being the case, why the technician?

SOME PERSONAL EXPERIENCES

A ridiculous incident which occurred in my early experience has some bearing on this part of the subject. A friend telephoned me that her cat had met with an accident and had a broken leg. Would I come and fix it? I went. After anesthetizing the cat, I showed my friend how to continue the administration of the anesthetic while I reduced the fracture. I cautioned her to let me know if any change occurred in the cat's breathing. I then became intent upon my surgical work. After a time, my friend said, "I believe that Sammy is not breathing." He was not. In fact, he appeared to be very dead. However, I was fortunate enough to revive him, after which I finished with the leg as quickly as possible, wishing to avoid further anesthetic. That cat never did have a really beautiful leg, but he was alive, which was more than I deserved under the circumstances.

May I be permitted to mention some other instances that illuminate my subject?

Years ago I was called to anesthetize a patient who had developed mastoiditis in the course of pneumonia. He was desperately ill, his heart being in an especially alarming condition. The surgeon asked me to give chloroform because of the pneumonia. I mentioned the heart condition, but he insisted that chloroform was the least of evils. I said that a patient in the condition of this one would not live through even induction with chloroform. The reply was, "Well, what are we to do?" I suggested local. "No, impossible." Nitrous oxid and oxygen? "No." At last in desperation, I said, "I am sorry, but I must refuse to act as executioner. Gas is the only general anesthetic possible in his condition." Finally the surgeon consented, and I gave nitrous oxid and oxygen with the only apparatus then available—a first-model Teeter machine with no pressure control, with nitrous oxid cylinders holding one hundred gallons, and oxygen cylinders with a capacity of forty gallons. The operation required two hours, and when it was finished I felt years older; but the patient was alive and uninjured by his anesthetic. What would an anesthetic technician have done in this case?

Again, a splenectomy was in progress. The patient's condition became unsatisfactory. I told the surgeon. No response. That particular surgeon would have been unwilling for anyone except himself to order the treatment which the patient's condition clearly indicated. In a short time, I remarked that the patient's condition was becoming steadily worse. Still no reply. At last I said, "The patient's condition is desperate." At this, the surgeon looked up and asked an internist who was present to see what was wrong. The internist felt the pulse and, without making any further investigation, said, "The patient is quite all right." Half an hour later the patient was dead.

On a later occasion I was giving an anesthetic for this same surgeon. The patient weighed eighty-seven pounds. There was considerable hemorrhage—not enough to be serious for an adult of average size, but too much for this 87-pound woman. Again I warned the surgeon. This time he was irritated, but finally asked a physician standing by to see what he thought of the patient's condition. As this man leaned over to feel the pulse, I muttered in his ear, "If you say that she is all right, her blood be upon your head." He did not say it. The operation was stopped, and the patient put to bed. The surgeon then remarked, "I had no idea that she could possibly be in such condition." The operation was finished a few days later, and the patient recovered.

COMMENT

Doubtless other pioneer medical anesthetists have had experiences similar to these, and I mention them simply to bring out the fact that the work of anesthetists is, and of right ought to be, the practice of medicine—that the anesthetist should be shown the same consideration in his specialty that is shown the members of other medical specialties.

The incidents mentioned occurred more than twenty years ago. I trust no one will think that any criticism of the surgeons with whom I have worked for many years past is intended. In fact, the members of the anesthetic department in the institution with which I have the honor to be connected, have reason to feel fortunate in the attitude toward anesthesiology of the medical school authorities, surgeons, internists, and hospital executives.

One of the common arguments used by those who favor anesthetic technicians is that it would be impossible to provide a sufficient number of medical anesthetists to fill the need. Is that a statement of fact? According to the final report of the Commission on Medical Education, published January, 1933: "There are more physicians in the United States than are needed to provide an adequate medical service for the country. The United States has more physicians per unit of population than any other country in the world; twice as many as the leading countries of Europe."

From this report it seems evident that we have more than enough physicians to attend to all branches of medical practice, and that the employment of technicians for work which should be done by physicians is not only unnecessary, but is a short-sighted policy.

Why should we add to our constantly increasing oversupply of physicians a large class of pseudo-physicians? Is the medical profession to follow the same destructive policy which has worked such havoc in the world of business and industry?

Anesthetists should not only be physicians, but physicians who, in addition to their medical education, have had sufficient instruction and training in this particular branch of medical practice to prepare them to meet the demands of this difficult and exacting specialty—the specialty of modern anesthesiology.

Do young physicians want this training? They certainly do. Every anesthetist in a teaching position knows this to be a fact. All we need is due recognition of our specialty, and we can and will supply an adequate number of trained medical anesthetists to meet all requirements.

FUTURE OF ANESTHESIOLOGY AS A SPECIALTY

The future of anesthesiology as a medical specialty in our country depends entirely upon whether or not the American medical profession is sufficiently ethical to keep the practice of medicine in the hands of physicians. This truth applies with particular force to the medical anesthetists who have yielded to pressure and are teaching or supervising technicians. Anesthetists must not only be physicians, they must be ethical physicians.

We, as medical anesthetists, should present a united front in this matter. We must not try to get ahead of each other, but try to get ahead with each other. We must accept every discouraging circumstance as a challenge to greater effort.

"Then, welcome each rebuff

That turns earth's smoothness rough,

Each sting that bids nor sit nor stand, but go!"

2557 Clay Street.

A STUDY OF FIVE HUNDRED CONSECUTIVE AUTOPSIES ON CHILDREN *

By C. M. HYLAND, M. D.
Los Angeles

DISCUSSION by William M. Happ, M. D., Los Angeles;
A. G. Foord, M. D., Pasadena.

EPSTEIN¹ recently presented a review of the records of one thousand consecutive autopsies on children and stated that, in a careful search of the medical literature for the past twenty years, he had failed to find a like report. The following report presents a series of five hundred consecutive autopsies on children, and for convenience in comparison the general plan of presentation as followed by Doctor Epstein will be followed in part in this paper.

The autopsies analyzed represent deaths from December 1, 1928, to December 13, 1931, and represent 95.8 per cent of all deaths during that time, occurring in the Children's Hospital, Los Angeles. In 98.2 per cent of the autopsies there was a complete examination of the thorax and abdomen. In 39.4 per cent the brain, paranasal sinuses and mastoids were examined, and in 1.8 per cent examination was limited to the site of the suspected lesion.

The hospital admits children up to the twelfth birthday. However, three cases of acquired heart disease are listed in Table 1 that passed their twelfth birthday as patients in the hospital, dying soon afterward. All specialties are represented in the hospital services.

All nationalities are admitted to the hospital, and cases of contagious disease developing after admission are immediately removed. The following races are represented in this group of cases: whites, negroes, Japanese, Chinese, Mexicans, and Filipinos.

Table 1 gives the causes of death for both sexes in the various age groups.

FINDINGS FOR DIFFERENT DISEASES

Pneumonia.—In the fifty-eight cases of pneumonia listed, both sexes were equally represented. By far the greatest per cent of deaths from this cause was in the first year of life. Pneumonia in some degree was present in two hundred forty-nine bodies. Bronchopneumonia accounted for thirty-six deaths. In twenty-two cases both sides were involved, and in fourteen cases either right or left side alone. Lobar pneumonia accounted for fourteen deaths. In five cases the upper right lung was involved, in one case the lower right lung, in four cases the entire right lung, and in two cases there was involvement of both sides. The lower left was involved in two cases, showing the lobar type of pneumonia. Six cases showed acute interstitial pneumonia. In five of these cases both lungs were involved, and in one

case only the right middle lobe was affected. One case showed influenzal pneumonia with involvement of both sides, and one case died of an aspiration pneumonia. Ten of the fourteen cases of lobar pneumonia showed an acute pleural involvement, while only seven cases of the thirty-six of bronchopneumonia showed gross evidence of pleurisy. Four cases of the pneumonia series showed the presence of chronic adhesive pleuritis. The single case of influenzal pneumonia had a mild fibrinous pleurisy over the involved area. Pleurisy is supposed to accompany a pneumonic process that exists near the lung surface, but I feel that most pathologists consider it a part of lobar pneumonia rather than proximity of the lesion to the surface.

Tuberculosis.—Tuberculosis was the cause of death in fifty-three cases divided almost equally between males and females, the larger number dying of this condition between two and five years of age. In forty-eight cases miliary tuberculosis was present, showing almost universal involvement of both lungs, liver and spleen, and in a fair number tubercles in one or both kidneys were found if examined carefully. Ulcerative tuberculosis with cavitation was present in four cases. In three the cavity was present in the upper right, and in the fourth case it was located in the upper left lobe. Tuberculous meningitis was found in forty-two cases, and in one case *Streptococcus viridans* was obtained from the spinal fluid before death, but the brain showed only the tuberculous lesion. In one case a tuberculoma was located in the left lateral ventricle and projected into the lumen of this cavity. The bronchial lymph glands were caseous in virtually all cases. Tuberculous ulceration of the intestines was present in sixteen cases. In one case a massive torsion of the omentum due to omental tuberculosis was present. Three cases showed tuberculous pleuritis, and seven cases showed definite tuberculosis of the pleura. In one case of tuberculous meningitis many tubercles were found in the dura overlying both parietal lobes. Thirteen cases showed caseous tuberculosis of the mesenteric lymph glands. Two cases showed a tuberculous mastoiditis, and one case showed a tuberculosis of both adrenals. Four cases showed tuberculosis of the thymus, one case a tuberculous myocarditis, and one case a symptomatic purpura. One case had a Pott's disease of the upper dorsal vertebra with a cold abscess of the mediastinum. There was also a case of tuberculous pericarditis which was the same case showing tuberculous myocarditis.

Septicemia.—Twenty cases were classified as dying from septicemia. Eight of the twenty cases began as an osteomyelitis, and one of these showed *Streptococcus hemolyticus* and one *Streptococcus viridans* on blood culture. In one the organism was not identified. The remaining five showed *Staphylococcus aureus* on blood culture. Two cases with repeated positive blood cultures of *Streptococcus viridans* showed ulcerative endocarditis at autopsy. One case of ulcerative endocarditis, following an abscess of the penis due to trauma, showed *Staphylococcus aureus* on re-

* From the Pathologic Laboratories, Los Angeles Children's Hospital.

* Read before the Pathology and Bacteriology Section of the California Medical Association, at the sixty-first annual session, Pasadena, May 2-5, 1932.

TABLE 1.—Causes of Death

	First Month		One to Twelve Months		One to Two Years		Two to Five Years		Five to Ten Years		Ten to Thirteen Years		Total	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Pneumonia.....	3	3	20	20	13	6	6	16	1	1	1	1	29	58
Tuberculosis.....	2	1	3	3	13	6	16	3	3	3	1	1	29	53
Septicemia.....	2	1	4	4	5	6	4	4	4	1	1	1	29	20
Purulent meningitis.....	1	1	6	6	1	1	1	1	1	1	1	1	11	9
Heart disease (acquired).....	6	2	15	15	1	1	1	1	1	1	1	1	18	40
Congenital malformations.....	6	1	15	15	1	1	1	1	1	1	1	1	14	12
Prenatal syphilis.....	1	1	3	3	1	1	1	1	1	1	1	1	23	13
Purulent pleuritis.....	4	4	14	14	1	1	1	1	1	1	1	1	23	36
Enterocolitis.....	4	4	14	14	1	1	1	1	1	1	1	1	23	8
Atelectasis.....	1	1	1	1	1	1	1	1	1	1	1	1	7	9
Prematurity.....	13	13	14	14	1	1	1	1	1	1	1	1	20	54
Malnutrition.....	1	1	1	1	1	1	1	1	1	1	1	1	7	11
Intussusception.....	1	1	1	1	1	1	1	1	1	1	1	1	12	29
Neoplasm.....	1	1	1	1	1	1	1	1	1	1	1	1	6	10
Mastoiditis.....	1	1	1	1	1	1	1	1	1	1	1	1	3	4
Peritonitis.....	1	1	1	1	1	1	1	1	1	1	1	1	7	16
Nephritis.....	1	1	1	1	1	1	1	1	1	1	1	1	17	24
Cerebral hemorrhage.....	5	5	11	11	1	1	1	1	1	1	1	1	8	16
Encephalitis.....	1	1	1	1	1	1	1	1	1	1	1	1	7	12
Surgery.....	1	1	1	1	1	1	1	1	1	1	1	1	5	6
Accident.....	1	1	1	1	1	1	1	1	1	1	1	1	5	5
Diarrhea.....	1	1	1	1	1	1	1	1	1	1	1	1	3	3
Dysentery.....	1	1	1	1	1	1	1	1	1	1	1	1	3	3
Diabetes.....	1	1	1	1	1	1	1	1	1	1	1	1	10	14
Yellow atrophy of liver.....	1	1	1	1	1	1	1	1	1	1	1	1	3	3
Cirrhosis of liver.....	1	1	1	1	1	1	1	1	1	1	1	1	3	3
Tetanus.....	1	1	1	1	1	1	1	1	1	1	1	1	3	3
Ulceration of esophagus.....	1	1	1	1	1	1	1	1	1	1	1	1	3	3
Miscellaneous.....	1	1	1	1	1	1	1	1	1	1	1	1	4	4
Undetermined.....	1	1	1	1	1	1	1	1	1	1	1	1	4	9
Totals.....	45	36	111	96	48	30	31	36	24	26	9	8	266	500

peated blood culture. One case with a marked ulceration of colon and lower jejunum showed on repeated blood cultures *Bacillus pyocyaneus*, and this organism was also recovered from the ulceration at autopsy. It was also found before death from a yellowish membrane that covered both tonsils. Three cases started with a multiple furunculosis, and in one *Streptococcus viridans* was isolated from the blood stream. One case followed an infection of the finger and showed *Staphylococcus albus* on blood culture. Four cases died about the time of admission, and cultures could not be taken; however, all presented every anatomical evidence of septicemia. Two were classified as sepsis of the newborn, one had an abscess of the kidney, and one a massive abscess of the chest wall. In two cases the organism was not identified.

Meningitis.—Meningitis was present in eight-two instances, forty being of the purulent variety and forty-two being tuberculous. In one case a *Streptococcus viridans* was cultured from the spinal fluid, and this case showed tuberculous meningitis at autopsy. A purulent exudate was not present on the brain surface. However, hyperemia was pronounced, and in this respect, in addition to the tuberculous lesion, the brain resembled the hyperemic type of lesion found rarely in *Streptococcus meningitidis*, i. e., hyperemia without exudate. Table 2 follows, showing the causative organism present and distribution according to age groups in the meningitis series.

Contagious Diseases.—Contagious diseases accounted for five deaths; one male, eleven years of age, dying of a diphtheritic trachitis and bronchitis and an acute non-suppurative myocarditis. Postdiphtheritic myocarditis caused the death of one male ten months of age and a female ten years of age. One male, four years of age, died of a postdiphtheritic paralysis of the diaphragm. One male, three years of age, died of postmeasles, pneumonia and empyema and mastoiditis.

Heart Diseases.—Fifteen cases of acquired heart disease were encountered in this series. Eleven cases showed acute valvular lesions, and four cases showed chronic valvular lesions. The pericardium was involved in thirteen instances, six cases showed acute fibrinous peri-

TABLE 2.—Causative Organisms in the Meningitis Series

Age	Tubercle Bacillus	Meningococcus	Pneumococcus	Influenza	Streptococcus Beta	Streptococcus Alpha	Streptococcus Type Undetermined	Staphylococcus	B. Coll	B. Enteritidis	Undetermined	Total
First month .....	..	..	..	..	..	..	..	1	..	..	..	1
First year	2	1	2	..	..	..	3	1	1	..	1	11
One to two years	16	1	2	4	..	2	1	..	..	1	..	27
Two to five years	21	..	1	2	..	2	2	..	..	..	..	28
Five to ten years	2	..	..	1	2	4	3	..	..	..	1	13
Ten to twelve years	1	..	..	..	..	..	1	..	..	..	..	2
Totals	42	2	5	7	2	8	10	2	1	1	2	82

carditis, two cases subacute pericarditis, four cases chronic adhesive pericarditis, and one case purulent pericarditis. The various lesions were distributed, as in Table 3.

In ten of the cases Aschoff bodies were recognized in the histologic examination of the heart muscle.

Congenital Malformations.—Table 4 shows the type of congenital malformations found in this series. A total of ninety-four malformations were found in fifty-eight children. In thirty children one anomaly only was found, while in the remaining twenty-eight there were more than one anomaly present. Death was attributed to the malformation in thirty-six cases, and deaths from this condition were more frequent in the first year of life.

Of the cardiac anomalies all cases showing a defect of the interventricular wall also showed a patent foramen ovale. It is interesting to note that of the four mongolian idiots in this series, all four had heart defects, three having large defects of the interventricular wall with foramen ovale, and the other one a large interauricular defect measuring 1.3 centimeters in diameter with a normal ventricular septum. In six cases cardiac anomalies were associated in each instance with one or more other defects, as cleft palate, cleft lip, abdominal cryptorchidism, supernumerary digits, etc.

Prenatal Syphilis.—Eight patients died of this cause, and all of the deaths were in the first year of life. In all eight cases the causative organism was demonstrated by special stains in various tis-

sues. The liver was the most frequently involved of all organs, next in frequency being the lungs. One of the cases dying in the first month showed a large gumma of the left ventricular wall. None of the cases dying of this condition showed the presence of any congenital anomaly.

Purulent Pleuritis.—This condition was present in nine instances. In five cases it was limited to the left side, and in the remaining four to the right side. In no instance was it bilateral. Cultures from the fluid showed in three instances a streptococcus, in two a staphylococcus, in one a pneumococcus, and in three instances the organism present was not determined.

Enterocolitis.—The term "intoxication," as used by Epstein to indicate cases showing fatty infiltration in the liver and dehydration of the

TABLE 4.—Congenital Anomalies

Heart.	
Patent foramen ovale	15
Patent ventriculm septum	10
Transposition of aortic and pulmonic arteries	3
Patent ductus arteriosus	2
Biatrial trilocularis	1
Coarction of pulmonic artery	2
Rudimentary mitral valve	1
Congenital pulmonic stenosis	1
Anomalous origin of coronary artery	1
Genito-Urinary.	
Obstruction:	
Unilateral	6
Bilateral	5
Double pelvis:	
Unilateral	1
Bilateral .....	..
Double ureter:	
Unilateral	2
Bilateral .....	..
Hypospadias	1
Horse-shoe kidney	1
Absent kidney	1
Extrophy of bladder	1
Gastro-Intestinal.	
Pyloric stenosis	4
Intestinal obstruction	1
Imperforate rectum	1
Meckel's diverticulum	4
Bile duct stenosis	1
Miscellaneous.	
Cleft palate	9
Cleft lip	6
Spinal bifida	3
Hydrocephalus	1
Club feet	1
Extra digits	2
Mongolian idioey	4
Recto vaginal fistula	1
Laryngeal stenosis	1
Bilateral abdominal cryptorchidism	1

TABLE 3.—Distribution of Heart Lesions

Mitral only	5
Mitral and aortic	2
Mitral and tricuspid	3
Mitral, tricuspid and aortic	4
Mitral, aortic and pulmonic	1
Mitral, pulmonic and tricuspid	0
All valves	0
Tricuspid only	0
Pulmonic only	0
Aortic only	0
Acute fibrinous pericarditis	6
Chronic adhesive pericarditis	4
Subacute pericarditis	2
Purulent pericarditis	1

TABLE 5.—*Neoplasms*

Sex	Age	Primary	Type	Metastasis
F.	11 mos.	Cerebellum	Medulloblastoma	None
F.	2 yrs.	Cerebellum	Medulloblastoma	None
F.	3 yrs.	Cerebellum	Medulloblastoma	None
M.	6 yrs.	Cerebellum	Medulloblastoma	None
F.	6 yrs.	Cerebellum	Medulloblastoma	None
F.	8 yrs.	Cerebellum	Medulloblastoma	None
M.	11 yrs.	Cerebellum	Spongioblastoma Multiforme	None
M.	5½ yrs.	Right kidney	Embryonal adeno sarcoma	Both lungs, retroperitoneal glands
M.	6 yrs.	Left kidney	Embryonal adeno sarcoma	Ribs, spinal column, skull, dura, right lung
F.	6 yrs.	Left kidney	Embryonal adeno sarcoma	Liver, spleen, right lung
M.	4 mos.	Right adrenal	Neurocytoma	Liver, lymph glands about common duct
M.	1 yr.	Right adrenal	Neurocytoma	Liver and bones
F.	9 yrs.	Left femur	Ewing's tumor	Pelvis, vertebra, ribs, lungs and dura
M.	7 mos.	Spinal canal	Epidural lipoma	None
F.	2¾ yrs.	Thymus	Thymoma	Pleura, pericardium, retroperitoneal glands, both kidneys
M.	2½ yrs.	Intestines	Sarcoma	Cervical inguinal and iliac glands, both kidneys

body, coupled with a history of anhydremia and cholera infantum, is not used in this series of cases, and it is possible that under the term "enterocolitis" some cases are listed that would answer to the description of the term "intoxication" as used by this author. In many of the cases the intestinal lesions found at autopsy were not of a severe degree; nevertheless, hyperemia and desquamation of the mucosa were present. In all cases, however, rather marked gastro-intestinal symptoms were present before death.

Status Lymphaticus.—Nine cases appear in this series showing rather classical anatomical evidence of this condition. In all cases death was rather sudden, in most cases entirely unexpected. Autopsy findings showed constant hyperplasia of lymphoid glands, hyperplasia of solitary follicles and Peyer's patches in the intestinal tract, multiple subepicardial and subpleural hemorrhage with an absence of other prominent findings. The average weight of the glands was 24.1 grams. The individual weights ranged from 15 to 40 grams. One gland only in this group of cases weighed as little as 15 grams. It is the feeling of the writer that the accepted standards of weight of the thymic gland in infants and children is much too high; seldom, if ever, does a thymus at birth weigh as much as the accepted standard. The lesions characterizing the so-called thymic death have been observed too frequently not to feel that this is a distinct entity though the thymic gland of itself is not markedly increased in weight. In other cases in this series outside those now under consideration, some had certain findings suggesting a thymic taint. However, the presence of a lesion capable in itself of causing death, even though the lesion was not of a severe degree, caused these cases to be classified otherwise, regardless of any personal feeling in the matter.

Neoplasms.—There were sixteen tumors causing death, of which seven were intracranial, all being located in the cerebellum. Three primary tumors of the kidney were encountered, all showing rather extensive metastasis. Two neurocytomas, both primary, in the right adrenal were encountered and orbital metastasis was not present in either case. Bone metastasis was present in one case, the first symptom in this case being a pathologic fracture of the left humerus. A Ewing's tumor was found in one instance showing extensive metastasis to bones. One case showed an extensive epidural lipoma of the spinal cord. Diffuse gastro-intestinal sarcoma and a thymoma both occurred once. Table 5 gives additional data on this group of cases.

Mastoiditis.—Of the twenty-four cases of this condition, nineteen were bilateral and five unilateral. In some cases more than one organism was cultured from the pus obtained at autopsy.

Table 6 shows the various organisms recovered and the number of times present.

Peritonitis.—Of the thirteen cases dying of this condition the process was general in twelve and localized in one. In five cases a perforated appendix was the causative factor.

Nephritis.—No example of a pure tubular lesion was found in this series. Two cases were rather typical clinically of a lipoid nephrosis. However, at autopsy these cases represented the

TABLE 6

Organism	Times Present
<i>Streptococcus alpha</i>	12
<i>Staphylococcus</i>	6
<i>Streptococcus beta</i>	1
<i>B. pyocyaneus</i>	2
<i>B. xerosis</i>	1
<i>B. coli</i>	4
<i>B. fecalis alkaligenes</i>	1

mixed type. One case was considered mixed during the course of illness. Four cases were of a chronic diffuse type, three cases of an acute diffuse type, and two cases died of acute interstitial nephritis with no other significant lesion.

Cerebral Hemorrhage.—In the six instances of this condition the hemorrhage was subtentorial in three instances. In one case the hemorrhage was over the left occipital lobe, in another over the superior surface of the cerebrum, and in the other case hemorrhage occurred into both lateral ventricles.

Encephalitis.—Two of the cases of this condition were characteristic of the variety described by Symmers and called by this author "toxic encephalitis." The other cases were characterized by congestion, and marked round-cell infiltration.

Surgical Operations.—Of the cases listed under this heading, two died of pneumonia, one operated for a massive cystic hygroma, a second for hernia and appendix, and one patient died following repair of a cleft lip.

Accident.—Of the accidental deaths one was due to ulceration and perforation of esophagus, following the swallowing of a sharp stone. One case died of a mediastinitis, following perforation of esophagus with a safety pin. One case died as the result of ant-paste poisoning, one died following hydrochloric-acid poisoning, and one died as the result of a lye burn of the esophagus.

Diseases of the Blood.—Seven patients died of the various blood dyscrasias. In this group were four leukemias, one typical myeloid leukemia, and three of the aleukemic lymphoid variety. All three of the latter patients were under observation from early in the illness and had repeated blood examinations, the highest white count charted in any case being 7,150. In all cases before death lymphocytes were high, reaching 93 per cent in one case. This lymphocytosis was marked on admission in two of the cases, and in one case lymphocytes were high, reaching 70 per cent one week after admission. Premature cells of the lymphoid series were found in two of the cases, and in the case in which they were not found the course of the disease was rather acute and only four blood examinations were made. However, isolated cases of this condition have existed with only normal cells being found. Histologic examination of organs showed in all the cases a picture of classical leukemia as infiltration in spleen, glands, liver, and bone marrow. One of the cases showed a *Bacillus pyocyaneus* on blood culture before death. One case died of aplastic anemia, one died of secondary anemia due to the total feeding of breast milk (this case being over two years of age and having nothing but breast milk during its entire life), one case died of a thrombocytopenic purpura.

Dysentery.—Fourteen cases died of this condition, all showing ulcerative lesions in the lower intestine. In ten cases the causative organism was of the Flexner type, three cases *B. dysenteriae* (Shiga), and in a single case the type remained undetermined after much cultural study.

Diabetes.—Three cases succumbed to diabetes, all dying as the result of coma. All cases showed

lesions generally found in diabetes as decrease in the number of islets, increase in cells making up the islets, and moderate sclerosis of the interstitial framework of the gland.

Yellow Atrophy of the Liver.—Two cases of atrophy of the liver, both of the subacute variety, were encountered in this series of cases.

Cirrhosis.—One case each of atrophic cirrhosis and biliary cirrhosis were encountered.

Tetanus.—One case of tetanus followed a compound fracture of the right ulna, and the other a soft tissue injury of the right foot.

Ulceration of Esophagus.—Three cases showed as the only prominent lesion, a marked ulceration of the esophagus with much hemorrhage in the stomach.

Miscellaneous Causes.—This group, numbering thirteen cases, is composed of one case each of rabies, magacolon, epilepsy, typhoid fever, acute rickets, perinephritic abscess, retropharyngeal abscess, bronchiectasis, portal thrombosis, edema of larynx, necrotic stomatitis, and pachymeningitis cervicalis hypertrophica coexisting with a lateral sinus thrombosis.

Undetermined.—Nine cases in this series are not a high percentage of undetermined when compared with other like series, and especially when analyzing deaths in infants and children. In studying the protocol of these nine cases, one finds that in six the thymus exceeds the normal weight for the age. Also, in five of the above six hyperplasia of lymph glands, lymphoid follicles and Peyer's patches, subpericardial and subpleural hemorrhages are mentioned in each case, and with such findings one cannot but wonder what part a thymic taint may have contributed to these deaths.

SUMMARY

1. The anatomic findings of five hundred consecutive autopsies on children are tabulated and a brief discussion of each group of cases presented.

4614 Sunset Boulevard.

REFERENCE

1. Epstein, I. M.: Am. J. Dis. Child., 41:1363 (June), 1931.

DISCUSSION

WILLIAM M. HAPP, M.D. (523 West Sixth Street, Los Angeles).—Doctor Hyland's analysis of the causes of death in five hundred children over a three-year period affords many interesting points for study. One is struck by the fact that half of these patients died under the age of one year. This high infant mortality was due mainly to diarrhea, prematurity, congenital malformations and infections, chiefly pneumonia and otitis with its complications. This last-mentioned condition constitutes one of the chief menaces of the infant ward. In studying the group as a whole, it is noted that over half of the deaths were from infections of one kind or another, whereas heart and kidney disease account for only a small percentage. This is in striking contrast to a parallel analysis of deaths in an adult hospital.

The high incidence of deaths from tuberculosis should be especially noted, standing next to pneumonia as the chief cause of death. The importance of tuberculosis in childhood is thus very tragically emphasized. Most of these deaths are preventable by the early recognition of the disease in the parent or source of contact, early segregation of the child from the source of contact, and early recognition of the disease

in the child. Following the general rule, most of the children dying from tuberculosis showed tuberculous meningitis at autopsy, forty-two of fifty-three cases. The low incidence of congenital syphilis (1.6 per cent) is encouraging, and speaks well for the increasing interest in the recognition and treatment of the disease in the mothers. Formerly the incidence was much higher. The relatively large number of deaths attributed to the thymus affords opportunity for discussion. Failure to discover a satisfactory explanation for death should not necessitate classification as "thymus death," even though the thymus gland and the lymph glands are enlarged. It is hoped that a more satisfactory understanding of these sudden deaths will be forthcoming in the future. In the meanwhile, it is necessary to continue using the present classification, unsatisfactory as it is. Finally, it should be noted that three of four cases of leukemia were of the aleukemic or leukopenic type, which seems to be the rule in childhood.

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A. G. FOORD, M. D. (Pasadena Hospital, Pasadena). In reviewing the summary presented today, the frankness of Doctor Hyland is brought out by the fact that he admits that there are nine out of the five hundred cases in which he was unable to make a diagnosis. This is the usual experience of men handling material from a hospital such as his, but some men do not care to admit that they do not know the reason for death in some patients.

I agree with Doctor Happ that the diagnosis of status lymphaticus is one that should be used in the rarest of instances, particularly when cognizance is taken of the fact that cases of sudden death, either in adults or children, are very prone to show prominent lymphoid tissue, whereas those sick only a few days or longer show much less prominence of the lymphatic apparatus. This point was brought out strongly by the Germans in their autopsies on young soldiers in the recent war, and has commonly been mentioned in cases of suicide.

The finding that half of the cases of meningitis were due to tuberculosis should make us all think of a tuberculous origin of cases of meningitis in children, particularly those in hospitals where there is a large Mexican or negro population. At the same time, seven out of eighty-two cases of meningitis due to influenza bacillus is a percentage somewhat higher than usually found.

Of particular interest are the types of organisms found in cases of mastoiditis. In twenty-seven patients, no pneumococcus was found. In our Pasadena experience in the last few years, pneumococcus has been found frequently, particularly pneumococcus type three, and the hemolytic streptococcus beta, much more commonly than the green-producing alpha type.

The low incidence of nephritis—only twelve cases among five hundred patients—is rather striking, but the figures gibe with experience in other hospitals, where teaching material on nephritis is often obtained with great difficulty.

Doctor Hyland should be congratulated on the work of his laboratory in uncovering bacillary dysentery, fourteen of such cases being included in his autopsy material. The policy of his laboratory of routinely culturing stools of babes and children with a diarrhea is to be recommended.

His figures as to the cases of death are particularly valuable, since he has reached the almost unheard of record of 96 per cent of autopsies on those dying in the Children's Hospital in Los Angeles. Certainly, his record is one that all pathologists should try to equal.

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DOCTOR HYLAND (Closing).—I wish to thank Doctors Happ and Foord for discussion of this paper. It was anticipated that the cases listed as "status lymphaticus" would be referred to in this discussion. I am aware that patients dying suddenly show a more prominent lymphoid apparatus than patients sick for some days or weeks; however, one not infrequently encounters a case in which this is not true.

I made an attempt in this series to keep as low as possible the incidence of this condition, and found it more of a problem than if the series was composed of a like number of adults. As stated in the analysis, no cases were labeled "Status Lymphaticus" that did not present the classical accepted picture of this condition; however, I am in complete accord with both of the discussers as to the lack of understanding this term conveys. I am also aware of the absence of the pneumococcus in our cases of mastoiditis in this series.

In some of our recovered patients, this organism was present, but it was present very infrequently, which is not in agreement with Doctor Foord's experience in Pasadena. We have found the culturing of material from the intestinal tract and from the scraped mucosa at autopsy a valuable procedure, and it is done on all cases showing the least suggestion of an inflammatory lesion. Many cases of bacillary dysentery have been discovered since we have followed this procedure.

PORRO CESAREAN SECTION*

By EDMOND M. LAZARD, M. D.
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BY the term "Porro cesarean section," hysterectomy following delivery of the baby by abdominal section is generally understood.

In 1876, the procedure was advocated by Porro in order to reduce the prohibitive mortality from puerperal infection following section which prevailed at the time. Then section was practiced as a last resort; the principles of asepsis were unknown, and suture of the uterus was not done. The wonder is, not that there was a high mortality, but that there were any recoveries following such a procedure.

The classical technique of the Porro operation was to eventrate the unopened uterus (the incision in the uterus being made extra-abdominally) and, after removal of the uterine contents, a rubber tourniquet was placed around the lower uterine segment to control hemorrhage; the cervix was transfixed with knitting needles which fixed the stump in the lower angle of the abdominal wound, and the uterus was amputated. Thus the risk of infection of the peritoneal cavity from spill of the infected uterine contents was largely obviated, and the danger from hemorrhage was overcome.

There was an immediate improvement in the results.

With the development of asepsis and improvement in surgical technique, the classical Porro operation has been almost entirely replaced with a typical supravaginal amputation of the uterus, with suture and peritonization of the stump. This is what is usually meant by Porro section today.

INDICATIONS

While the neglected or maltreated case, with possible or actual infection present, still is the principal reason for the Porro procedure, yet the modern indications have been broadened to include fibroids; abruptio placentae with Convellaire uterus and elective for purposes of sterilization.

As a method of sterilization, the Porro procedure has the following advantages over the less radical methods of tubal sterilization. First, may

* Chairman's address, Obstetrics and Gynecology Section of the California Medical Association, at the sixty-second annual session, Del Monte, April 24-27, 1933.

be mentioned that there is far less danger of infection than in the tubal sterilizations. In the latter method, after taking every precaution to protect the general peritoneal cavity during the sectioning, two new wounds are made in the cornuae of the uterus, necessitating invasion of the general peritoneal cavity after having invaded the potentially infected uterine cavity; thus largely losing the advantage of the care used to protect the peritoneal cavity during the sectioning. I have knowledge of three fatal cases resulting from tubal sterilizations, following section; and one, which came to autopsy, was performed by a most competent and skillful surgeon. At autopsy, a localized abscess at the site of the tubal resection, with intestinal adhesions to the abscess and obstruction of the bowels with generalized peritonitis, were found. A second patient, seen in consultation one week after an elective section and sterilization, was in extremis from a septic peritonitis and died within two hours of the time she was seen. With the Porro procedure, the danger of infection is reduced to a minimum, and there is this second advantage, its absolute assurance of effecting sterilization. There have been many pregnancies after attempt at sterilization by the tubal operations. In the third place, the Porro procedure can be done in less time and with less shock to the patient than is the case with the tubal procedure. Fourth, it relieves the patient of a large involuting organ, which is of no further functional use and only potent for later trouble, such as fibroid or malignancy developing.

The disadvantage of the premature onset of the menopause can be largely obviated by properly preparing the patient for its advent.

I have had the opportunity of reviewing the records of the Los Angeles General Hospital, the Hollywood, California, and the Cedars of Lebanon hospitals for the past five years, and have found therein instances of fifty-one Porro cesarean operations, among which were seventeen personal cases, several of the latter antedating the five-year period.

The indications for the procedure were: potential or actual infection, 9; fibroids, 20; abruptio placentae, 4; failure of uterus to contract satisfactorily after section, 2; elective for purposes of sterilization, 15; and one case of gangrene of the lower uterine segment complicating obstructed labor.

Of the cases in which this procedure was elected for purposes of sterilization, one patient was a grav. 1; both the patient and her husband were crippled as a result of infantile paralysis, and they both requested that sterilization be done. She had a generally contracted pelvis, and was given a test of labor before section was proceeded with.

Eleven of the patients who were sterilized by this method had had previous sections, and three were multiparae who had dystocia due to previous amputations of the cervix. There were no deaths in this group.

Of the twenty cases in the fibroid group all had multiple fibroids, and in two cases there were degenerating fibroids. All of these patients made

good recoveries, the highest postoperative temperature being 102.4 on one occasion in one of the degenerating fibroid cases.

The abruptio placentae group of four cases furnishes one of the deaths of the series. This was a patient whose operation was delayed several hours after the condition was recognized, and who died of shock within an hour after the termination of the operation. The three cases of abruptio which recovered were all classed as bad operative risks, preoperatively; and all had comparatively smooth recoveries. The babies of these four mothers were dead when the patients came under observation.

The two cases in which Porro was done because of noncontractility of the uterus following section, made good recoveries.

The classical indication for the Porro procedure, viz., actual or highly probable infection, was given in nine cases; and this group furnishes two of the deaths. One of these fatalities was a patient who had had a previous classical section. She was first seen when she was in premature labor at seven and one-half months, with signs of a threatened uterine rupture, and she had a temperature of 101.2. She was immediately subjected to a Porro section, but death occurred forty-nine hours after operation. At autopsy, a gas bacillus infection with necrosis of the uterine stump was found. In this case, a marsupialization of the cervical stump similar to the manner described by Porro would probably have been more favorable than the modern procedure of peritonizing the stump and dropping it back in the pelvis.

The second patient of this infected group who died was a grav. 1, who was seen in consultation in a small maternity cottage after she had been in labor seventy-two hours; she had been examined vaginally twice under what was thought to be aseptic precautions. She was regarded as a potentially infected case, and for this reason a Porro was done. She died on the sixth postoperative day with evidences of septic peritonitis; an autopsy could not be obtained.

The patient who was sectioned for threatened uterine rupture was classed as an almost hopeless risk. She was found at operation to have a gangrene of the lower uterine segment with a necrotic longitudinal rupture of the uterus, and there was a massive retroperitoneal hemorrhage. A rapid supravaginal amputation of the uterus, with marsupialization of the stump in the lower angle of the wound, was done. The patient died within an hour after the operation was finished. This case has already been reported, and is to be published later.

MORBIDITY

The convalescence was unusually smooth in all of the cases which were done for sterilization with the exception of two cases—one patient who developed pyelitis, with a temperature of 104 on the eighth day, but recovered and was discharged on the fifteenth day, and another patient who had had a previous amputation of the cervix and who, after the Porro, developed an abscess of the abdominal wall and was not discharged from the

hospital until the thirty-seventh postoperative day. This was the longest hospitalization of the entire number, all the others being discharged within from fourteen to twenty-one days.

The potentially or actually infected group naturally had the most stormy convalescence, their temperature ranging from 101 to 104; but with the exception of the two who died, all made good recoveries and were discharged within three weeks.

TECHNIQUE

As already noted, the present-day technique of the so-called Porro operation is very different from that advocated originally by Porro.

Where the indication is fibroids or elective for sterilization, either the low cervical section or the classical section followed by supravaginal amputation of the uterus with peritonization of the cervical stump, should be the procedure.

If the low cervical operation is done, the transverse incision of the cervix is of advantage, as half the amputation is done when the baby is delivered.

If the indication is actual infection, the uterus should be everted before opening, and every precaution taken to protect the abdominal cavity from infection by spill from the uterus. It is a question as to whether the Portes exteriorization is not preferable to the Porro in cases of frank infection, as there is a better chance of protecting the peritoneal cavity; and in case of a primigravida woman the conservation of the uterus, with the possibility of a future pregnancy, is a great advantage.

CONCLUSIONS

1. Porro cesarean section for fibroids, or elective for purposes of sterilization, should have no more mortality than is incident to any laparotomy; and the convalescence is as a rule uneventful.

2. Where the operation is done for fibroids, abruptio placentae or elective for sterilization, either a classical operation or a low cervical section with a transverse incision of the cervix, followed by supravaginal amputation of the uterus with peritonization of the cervical stump, should be the procedure of choice.

3. If the reason for the operation is a frank infection, every precaution should be taken to protect the peritoneal cavity from infection, by everting the unopened uterus and doing the work extra-abdominally. It is a question whether the Portes temporary exteriorization operation would not give better results in the frankly infected case and have, at the same time, the advantage of preserving the uterus.

4. In a series of fifty-one Porro operations, here reported, there were four deaths, 7.8 per cent; two of the deaths being from the group of nine cases done because of infection, 22 per cent; one death in the four cases of abruptio, 25 per cent; and one death from gangrene of the lower uterine segment with massive retroperitoneal hemorrhage present before operation.

In twenty cases done for fibroids, fifteen for sterilization, and two because of failure of uterus to contract after section, there were no deaths.

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POSTMENOPAUSAL HEMORRHAGE *

By MARGARET SCHULZE, M. D.
San Francisco

DISCUSSION by R. Glenn Craig, M. D., San Francisco;
John A. Sperry, M. D., San Francisco; H. N. Shaw, M. D.,
Los Angeles.

HEMORRHAGE first appearing after the cessation of menstrual life is such an abnormal manifestation that one should expect that it would occasion immediate anxiety on the part of the woman and receive immediate investigation from her physician. Yet it is astonishing to see how many women ignore this symptom (attributing it to a return of their youth) and appalling to see how frequently even well-trained physicians treat it palliatively without adequate investigation. All too often ergot is prescribed to control bleeding without even an examination, or a patient is given local treatments to her cervix while her fundal carcinoma grows beyond the limits of operability. One patient in this series had been treated twice weekly for a period of fourteen months without noticeable benefit. Becoming dissatisfied, she went to a second physician, who applied medication to her cervix for another six months before she finally appeared for investigation at the University of California Woman's Clinic.

Yet the number of such cases which do appear is constantly increasing. They formed 2.2 per cent of the 3,310 admissions in the first ten years on the gynecologic service, and 3.2 per cent of 7,360 admissions in the next nine and one-half years. Not infrequently at the present time a patient enters within a day or two after noticing the first slight spotting, and although these early admissions increase very greatly the hopefulness of accomplishing something for these patients, they also increase very greatly the difficulties of diagnosis in certain cases.

In many cases, unfortunately, the diagnosis is only too obvious, for malignancy of the genital tract, and particularly of the cervix and the fundus uteri, remains the most important cause of postmenopausal hemorrhage, and the one which must always be eliminated before any type of conservative treatment is justifiable. In other cases even the most thorough investigation, including examination under anesthesia and biopsy or diagnostic curettage may leave the diagnosis obscure. Such cases must of course remain under the closest observation until further developments establish diagnosis or cure.

ANALYSIS OF THE CLINICAL MATERIAL USED IN THIS STUDY

It was in an effort to throw additional light on this subject that the 315 cases occurring in 10,670 admissions to the gynecologic service were studied. It was found that in 215 cases, or more than two-thirds of the total number, the bleeding was due to a malignant tumor of the genital tract. Of these the very great majority were uterine tumors. One hundred and fifty-three patients had carcinoma of the cervix; in fourteen of these the

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carcinoma had developed in the cervical stump remaining after supravaginal hysterectomy. The histologic diagnosis of adenocarcinoma of the stump appearing rather soon after supravaginal hysterectomy elsewhere, aroused the suspicion in three of these cases that the tumor might have arisen from a fundal adenocarcinoma overlooked at the primary operation. Fifty-one women had fundal adenocarcinoma, two had sarcoma, and one a chorioepithelioma. Three women had vaginal carcinoma, two carcinomas of the urethra, and one had a carcinoma of the vulva. Among the ovarian tumors associated with postmenopausal hemorrhage were two ovarian cancers, as well as two of the semimalignant granulosa cell tumors.

Benign tumors causing bleeding are relatively infrequent in older women. Myomata are so definitely dependent upon ovarian function that they usually atrophy with the menopause or demand treatment before the menopause appears. There were only five uterine myomata, of which two were submucous, and two adenomyomata in the series.

Mucous polypi, both of the fundus and of the cervix, are, however, comparatively common, and are one of the obvious causes of hemorrhage, although occasionally they may be present for many years without giving rise to symptoms. There were twelve endometrial polypi and twenty-four of the cervix in this series. Malignant degeneration of both types undoubtedly occurs, although how frequently is difficult to estimate. At least one of the cervical carcinomata definitely originated at the base of a cervical polyp and there were very likely others. In certain of the fundal adenocarcinomata also the long duration of abnormal bleeding in the presence of a comparatively early growth suggested the earlier presence of benign growths or hyperplastic changes in the endometrium.

Bleeding, due to trauma to a uterus which is prolapsed, of which there were sixteen cases in this series, or to irritation from an ill-fitting pessary, of which there were two, is of importance only because the resultant ulcer must be differentiated from a malignant one. This is usually easy because of the very rapid response to appropriate treatment.

Slight bleeding associated with a senile vaginitis is easy to recognize, but occasionally, as in two cases in this series, it becomes necessary to eliminate other more serious causes. Severe trichomonas vaginitis may give rise to slight bleeding, but is so easy to diagnose that it becomes a problem only to the untrained.

Urethral caruncle caused hemorrhage that was mistaken for vaginal in two cases.

In thirteen cases there was a very severe endocervicitis with a cervix that bled easily and that brought up the question of differential diagnosis from a very early carcinoma. Biopsy showed only an inflammatory process, and the symptoms cleared up with cervical resection or cauterization.

Inflammatory lesions of the uterine fundus accounted for six further cases. In five cases there was a definite pyometra without evidence of carcinoma. Benthin's explanation of the occur-

rence of such cases may be the true one. He feels that there may be a stenosis of the cervical canal as a result of senile atrophy, resulting in an interference with drainage from the uterine cavity. Necrosis, due to poor nutrition of the senile mucosa, favors infection, while the poor development of the cervical mucous plug allows easier ascent of organisms. In one case, aside from those with definite pyometra, pathologic examination showed chronic inflammation in an atrophic endometrium, and it seems probable that a similar process may account for the bleeding in a considerable proportion of the seventeen cases in which even after careful investigation a definite diagnosis could not be established. These cases all showed no lesion, and curettage yielded either no tissue at all, or insufficient tissue for a diagnosis. Such cases are unsatisfactory, as they always leave one with the suspicion that a very early fundal carcinoma may have been missed by the curette. They should always be carefully followed, and if the symptoms are not promptly alleviated they should be reinvestigated. Fortunately the greater number clear up promptly simply with dilatation and curettage. Unless there is an actual pyometra, these patients usually have a small atrophic uterus, and the presence of definite uterine enlargement should always arouse the suspicion that there is more than an inflammatory lesion. In one such case, considered clinically a fundal adenocarcinoma and treated by radium only, because of her advanced age of seventy, insufficient tissue for diagnosis was obtained at the time of the first two treatments, yet the third specimen showed adenocarcinoma.

The most interesting cases in the entire series are those in which the bleeding is apparently associated with disturbances in ovarian function, either with or without actual tumor formation. These cases show a characteristic endometrial hyperplasia, with increase in interglandular stroma, and marked irregularity in size and shape of the glands—such as is seen in cases of so-called idiopathic menopausal hemorrhage. The ovaries in the cases of menopausal hemorrhage show numerous follicular cysts and an entire absence of lutein tissue, and it is believed that the excessive hemorrhage is due to an increase in follicular hormone and the absence of the lutein hormone. Where the postmenopausal hemorrhage is periodic, and appears relatively soon after the onset of the menopause, as in two cases in this series, we may assume, as does Robert Meyer, that it probably means a temporary reawakening of ovarian activity associated with the endocrine imbalance of the menopause. This probably explains also the not very infrequent history obtained from older patients of several periods of bleeding at definite intervals, often several years after the menopause, which later ceased without treatment. Such cases, although most interesting, are not included in this series, since there is no way of accurate determination of their etiology.

Among the ovarian tumors associated with postmenopausal hemorrhage were two pseudomucinous cystadenomata, one papillary cystadenoma, one cyst with twisted pedicle with such extensive

necroses and hemorrhagic infiltration of the tissues that its nature could not be determined, two ovarian carcinomata and two of the very interesting granulosa cell tumors which have been described so exhaustively by Robert Meyer.

These tumors are most interesting because there is definite evidence that the tumor cells exert a hormonal influence, and their recognition is important because they are relatively benign and early removal is usually followed by cure. These tumors are usually quite small, are well encapsulated, and are characterized microscopically by a resemblance of the tumor cells to the granulosa cells of the normal ovary and a tendency in the folliculoid type to form structures resembling Graafian follicles and follicular cysts. The cylindroid type shows the same type of cell, but here the cell masses are broken up into strands and figures to form bizarre patterns by the ingrowth of connective tissue stroma.

Our series includes two very typical though quite early cases, and it is most interesting to note that in both of these women the removal of the tumors, which were little larger than a normal ovary, was followed by severe vasomotor symptoms, although each had passed through the actual menopause some years before without marked disturbances.

Two other cases are of considerable interest in this connection—one a fairly large well-encapsulated ovarian tumor in a woman of forty-six who had her menopause at thirty-eight. She has been diagnosed as medullary carcinoma, but the tumor cells bear a considerable resemblance to granulosa cells although the arrangement is not characteristic. The endometrium shows the typical hyperplasia picture.

Another is a woman of sixty, who had her last menstrual period at forty-five, but was irregular for ten years previous with a very profuse flow. She was well till one month before admission, when she began to have an extremely copious vaginal hemorrhage which lasted two weeks. She was free one week and then started bleeding again. Pelvic examination was negative, but the endometrium was definitely hyperplastic. Hemorrhage ceased, following curettage and a large dose of radium, but the case is too recent to know what the final outcome will be. She is such an extremely poor surgical risk that an exploration seems inadvisable. The clinical picture in both these cases resembles very much that of a granulosa-cell tumor, and it will be interesting to follow them for a number of years to determine the final outcome.

CONCLUSIONS

Vaginal bleeding occurring after the menopause is a symptom of the utmost gravity and one that demands immediate investigation. In over two-thirds of all such cases appearing for diagnosis on the gynecologic service of the University of California the cause was found to be a malignant tumor of some portion of the genital tract. Almost half (49 per cent) of the total number had carcinoma of the cervix uteri. The benign causes were various, but could usually be readily deter-

mined by careful examination, including, if necessary, diagnostic curettage. In rare cases no cause could be established for the bleeding. Such women should always be kept under the closest possible observation, and, if necessary, be reinvestigated, but fortunately many of them are relieved merely by curettage.

University of California Hospital.

DISCUSSION

R. GLENN CRAIG, M. D. (490 Post Street, San Francisco).—I am sure we all feel indebted to Doctor Schulze for her presentation of this subject. The large number of histories reviewed adds weight to her words. It would hardly seem necessary to reiterate the dictum which has been taught in medical schools for so long, that bleeding after menopause is "cancer" until proved otherwise. Her statement that more than two-thirds of the patients with this complaint had a malignancy justifies the advisability of this viewpoint as a working rule, especially when we hear that one patient was treated for twenty months before the real condition was recognized and treated properly.

Again, it hardly seems necessary to restate that a diagnosis should be made before treatment is begun, but Doctor Schulze's statement that the percentage of such patients is increasing should warn us that we must continue to be alert. The ready availability of pathological laboratories should decrease the instances where early carcinoma of the cervix is mistaken for endocervicitis. Despite the objection that a diagnostic biopsy of the cervix should only be done when it can be promptly followed by proper treatment, it is preferable to incorrect treatment. I believe a biopsy should be done in all doubtful cases.

Benign and malignant neoplasm of the vulva, urethra, and vagina are usually easily recognized, as is a cervical polyp. But bleeding from the cervical canal may result from a pyometra, as well as an adenocarcinoma of the endometrium, and the differential diagnosis may not be easy. While we advise an early diagnosis, we also advise conservative surgery, especially in older persons. In the absence of any definite evidence of an existing adenocarcinoma, it is much less dangerous to the patient to advise a diagnostic curettage, which may cure the patient with pyometra, than to "boldly" undertake an extensive operation for an "adenocarcinoma" which does not exist. Doctor Schulze has pointed out the difficulty of the diagnosis and the necessity of a "follow-up."

Perhaps the most interesting group of the patients are those with ovarian neoplasms. I should like to repeat briefly the history of two patients whom I have seen.

One, a woman of fifty-eight, had had complete cessation of vaginal bleeding at fifty-one. Five months before presenting herself she began to have a regular menstrual flow. In addition, she felt younger and more vigorous, and was elated at her "regained youth." She had a carcinoma of the ovary. The second, a woman, age fifty-seven, had had a complete cessation of menstruation five years previously, with a return of her menstrual flow for the preceding three months. She also had a "carcinoma" of the ovary. Probably one or both of these patients had one of those interesting tumors, a granulosa cell carcinoma, or the awakening of the ovarian function was due to stimulation from the ovarian neoplasm.

Ten years from now I hope Doctor Schulze will be able to report a decrease, rather than an increase, in the number of incorrect diagnosis, as a result of her paper.

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JOHN A. SPERRY, M. D. (490 Post Street, San Francisco).—The matter of uterine bleeding in women nearing, during or past the menopause, is probably the most important of any gynecologic symptom. But strange to say, bleeding of this kind is often ignored by the patient, or what is worse, by the physician whom she consults. Also, as Doctor Schulze points

out, many are tamponed or given ergot until the undiagnosed cancer is hopeless.

A more serious neglect, and one for which there is no excuse, is the treatment by radium or x-ray of a bleeding uterus before an accurate diagnosis is made. The radium dose and number of applications is, of course, dependent upon the existing pathology. As to whether x-ray should be used of course depends upon an accurate diagnosis. Still we all see patients so treated without diagnostic curettage having been done who were given the customary dose for what was thought to be a small myoma or polyp and later were found to have a hopeless and neglected cancer. The physician who treats a uterus with radium or x-ray should know exactly what he is treating, as it is certainly a very great responsibility.

I saw, not long ago, a doctor's wife who began to bleed one year after her menopause. Diagnosis was made of a moderate sized myoma, which was treated with radium. The bleeding stopped for six months. Later a large and hopeless ovarian cancer was removed. The bleeding in this case had been stimulated by the ovarian growth, as mentioned by Doctor Schulze; and in this case if an accurate diagnosis could have been made and operation immediately done, her chances certainly would have been much better.

Doctor Schulze has found that two-thirds of those women showing bleeding after the menopause had cancer of the genital tract. This being true, certainly a careful investigation should be made before any treatment is undertaken.

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H. N. SHAW, M. D. (901-902 Pacific Mutual Building, Los Angeles).—I wish to emphasize the fact that, while diagnostic curettage is almost always indicated in these individuals, precautions must be observed. I shall cite two cases as examples.

Case 1.—M. R., age sixty-five, single, virgin. Complaint: slight vaginal bleeding for two weeks, thirteen years after menopause. On June 8, 1929, frozen section of curettings showed fundus carcinoma of "low malignancy" and panhysterectomy was performed at once. Five months later, on November 3, the patient had a vaginal hemorrhage. At examination that day, introduction of a speculum broke off a vascular tumor 3 by 1 by 1 centimeters at the upper angle of the vagina. Frozen section showed highly malignant tumor. There were two slightly smaller tumors in the upper vagina. These were given two applications of radium, and the patient had no recurrences.

Carcinoma rarely implants on mucous surfaces. We felt that the routine vaginal scrubbing with iodine and alcohol had removed the surface epithelium and laid open raw surfaces on which the carcinomatous fragments could implant. To avoid this danger in elderly patients with thin mucosa, we advise great care in the vaginal cleaning.

Case 2.—E. B., age fifty-seven, single, virgin. Complaint: Painless bleeding for two weeks nine years after menopause.

Curettage, August 30, 1928. Frozen section unsatisfactory, but rush paraffin section twenty-four hours later showed fundus carcinoma. On September 1, panhysterectomy showed a papillary carcinoma in upper angle of fundus two centimeters in diameter on a small pedicle.

This patient came into the hospital within less than three years, with signs of intestinal obstruction, and died on July 6, 1931. Autopsy showed carcinoma scattered over peritoneum and intestinal walls, causing obstruction, but no tumors in the broad ligaments, the usual site of recurrence.

An early carcinoma of the fundus in an elderly woman is usually cured by hysterectomy. We felt that the recurrences were due to material squeezed out through the tubes during the hysterectomy, rather than metastatic invasion by the lymphatics.

In any case of hysterectomy where carcinoma of the fundus is expected, the tubes should be ligated before exerting pressure on the fundus. This is especially necessary where a preliminary curettage has been done.

DOCTOR SCHULZE (Closing).—A statistical study such as the one above submitted serves mainly to reemphasize the importance of facts which are well known to us all. Since in two-thirds of all cases, including those with only the slightest spotting, postmenopausal bleeding is due to malignancy of the genital tract, it is not a symptom which can ever with safety be treated expectantly. As both Doctor Craig and Doctor Sperry have pointed out, the important thing is to establish a diagnosis. We may thus avoid, on the one hand, over-radical treatment in elderly patients who may be very poor operative risks, or, on the other hand, avoid palliative treatment with medication or inadequate radiation when we are dealing with cancer. The details of technique which Doctor Shaw has emphasized are most important, for without this great care to prevent dissemination at the time of operation, we may merely hasten the fatal termination rather than cure by our operative procedure.

CIRCULATION AND POSTURAL CHANGE*

ADJUSTMENTS IN HEALTH AND DISEASE

By DAVID G. GHRIST, M. D.
Los Angeles

DISCUSSION by Burrell O. Raulston, M. D., Los Angeles; Audley O. Sanders, M. D., Palo Alto; Thomas G. Inman, M. D., San Francisco.

ADJUSTMENT of the circulation to oppose the effect of gravity on assumption of the upright posture is largely dependent upon the phenomena of peripheral blood pressure. The three main factors contributing to a given blood pressure level are: (1) heart output; (2) blood volume; and (3) peripheral resistance. Defect in any of these factors may result in inefficient postural adjustment by the circulation.

The heart output, according to Grollman,¹ does not vary in normal subjects on change from recumbency to standing. The syncope associated with Stokes-Adams syndrome, however, represents failure of postural adjustment as a result of cardiac inefficiency. The animal experiments of Piorry in 1826 are quoted by Hill² as proving the importance of an adequate blood volume in compensating the effect of gravity.

PHYSIOLOGIC ADJUSTMENT OF PERIPHERAL RESISTANCE TO POSTURAL CHANGE

Definite information regarding the physiologic adjustment of peripheral resistance to postural change dates from the experimental work of Hill,² and Hill and Barnard³ in 1895 and 1897 respectively. From their experiments on animals, these investigators showed that compensatory constriction of the splanchnic arterioles successfully opposes the effect of gravity and prevents the development of cerebral anemia during the maintenance of the upright posture. Section of the splanchnic nerves, which abolished vasomotor tone in the splanchnic area, resulted in dilatation of the arterioles in this region. This caused little or no embarrassment to the circulation while the horizontal posture was maintained, on account of increased respiratory movements and abdominal muscle tone being capable of compensating for the arteriole dilatation. Assump-

* Read before the Anesthesiology Section of the California Medical Association at the sixty-first annual session, Pasadena, May 2-5, 1932.

tion of the erect posture, however, resulted in shift of the blood mass to the splanchnic venules and veins. Even under these conditions, the experimental animals were nevertheless capable of maintaining a fractional amount of venous return to the heart by increased force of respiratory movements which resulted in considerable aspiration of blood from the splanchnic area of venous congestion. After section of the spinal cord at the level of the first dorsal vertebra, efferent impulses were cut off from the vasomotor and respiratory centers, and compensation for the effect of gravity failed. Under these latter conditions, however, external pressure and massage of the abdomen appeared capable of opposing collection of the blood mass in the splanchnic area. After vagus section, failure of the heart to decrease its rate on attaining the horizontal position proved the importance of vagus control of heart rate in postural adjustment.

PARALYSIS OF SPLANCHNIC VASOCONSTRICTORS

Moderate ether anesthesia was shown by Hill² not to interfere with circulatory compensation for the upright posture. The forcing of ether or chloroform anesthesia was found to damage the compensation for postural change for a considerable period of time after the anesthetics had been removed. A paralysis of the vasomotor center took place with the pushing of both ether and chloroform. The latter anesthetic, however, depressed the vasomotor center more quickly and, in addition, depressed the heart. Therefore that investigator warned that chloroform could kill a patient when the abdomen is lower than the heart. Hill's demonstration of increased respiratory movements being capable of compensating for lack of splanchnic vasomotor tone in the upright posture probably explains why spinal anesthesia, when confined in motor paralysis to a level below the innervation of the major respiratory muscles, interferes but little with circulatory efficiency.

Other causes for paralysis of the splanchnic vasoconstrictors were named by Hill as follows: (1) severe operative procedures; (2) excessive handling of the intestines; (3) spinal cord injuries; (4) asphyxia; and (5) poisons, such as curare. He further believed that reflex dilatation of the splanchnic arterioles characterizes ordinary emotional syncope in the human subject. Asthenic individuals were believed by him to be less capable of compensating for gravity and were more prone to syncopal attacks of the reflex type. In the treatment of this type of circulatory collapse, compression and elevation of the abdomen were recommended.

SHOCK

In correlating failure of splanchnic compensation for postural change with surgical and traumatic shock, it seems best to accept Cannon's⁴ preference for classification of shock into primary and secondary types. Primary shock is that type which arises almost immediately after an injury, or suddenly during the course of an operation, and is apparently induced by reflex inhibition of

the vasomotor center. The dilatation of the splanchnic arterioles and consequent venous engorgement which occurs in this type of shock probably represents the same phenomenon as obtains during failure of vasomotor tone to compensate for postural change. Elevation of the abdomen, with lowering of the head, has proved alleviative in the treatment of primary shock, emotional syncope and symptoms arising from failure to compensate for the effect which gravity exerts upon the circulation. These phenomena are quite different from secondary or delayed traumatic shock which Cannon conceives as being characterized by arteriole constriction, capillary stasis, and diffusion of plasma into the tissue spaces with resultant decrease of the total blood volume. Apparently the vasomotor tone is effectively maintained until a very late stage of secondary shock is reached; hence lowering of the head is incapable of alleviating this latter form of collapse.

EFFECTS OF POSTURAL CHANGE IN HUMAN SUBJECTS

In human subjects, the normal response of pulse and blood pressure to postural change has been carefully studied by various investigators.^{5, 6, 7, 8} It is now quite generally accepted that a change from lying to standing posture in human subjects normally entails an average *rise* of ten to twelve beats in pulse rate, an average *rise* of from eight to ten millimeters diastolic blood pressure, and a very slight *fall* (0 to 4 millimeters) of the systolic blood pressure at the brachial artery region. This results in a decrease of approximately eight to twelve millimeters of pulse pressure on the assumption of the erect posture. Only very slight differences in the pulse and blood pressure reactions occur whether the postural change is actively or passively carried out. Raising of the head 45 degrees above horizontal was reported by Ellis⁶ to incite approximately the same compensatory response as when the total change from horizontal to upright took place. Failure of the diastolic blood pressure to rise on standing has been interpreted by Sewell,⁹ Mortenson⁸ and others as indicating a lack of vasomotor tone in the human subject.

Turner,^{10, 11, 12} in her study of the reactions of normal young women to prolonged standing, found that those individuals exhibiting a high reclining heart rate, or marked decrease of pulse pressure in the erect posture, were prone to develop symptoms of dizziness on prolonged standing. Her data suggests that better postural adjustment occurs in those subjects who do not give a previous history of faintness or dizziness on standing. She believes that abnormal rise of diastolic blood pressure on postural change indicates insufficiency of heart output. This investigator also shows that stagnation of blood in the abdominal area may occur during prolonged standing, and that bandage or support to the abdomen relieves the resultant symptoms. The improvement in postural adjustment after eating, reported by her, indicates the rôle which increased

intestinal peristalsis may play in augmenting venous return.

Since 1925, when Bradbury and Eggleston¹³ reported three cases exhibiting marked fall of blood pressure on assumption of the upright posture, a total of eleven cases of true postural hypotension, without associated Addison's disease, has been reported in the literature. Review of these case reports reveals a high incidence of commonly associated phenomena such as syncope attacks on change from lying to standing, slow, unchanging pulse rate on postural change, anhidrosis, slight decrease in the basal metabolic rate and loss of sex urge. Several of the older cases exhibited marked general arteriosclerosis, which may have been important in consideration of their etiology. Since Ghrist and Brown¹⁴ report successful alleviation of symptoms in one case of true postural hypotension by repeated small doses of ephedrin, this drug deserves a trial in cases so diagnosed. Those cases obtaining relief of postural symptoms by use of ephedrin probably present an atony of the myoneural junctures of the arterioles as their primary defect. Other cases reveal more probable evidence of defect in the nervous system of vasomotor control. In this disease, failure of abdominal support to give symptomatic relief in practically all attempts at treatment by this measure, presents evidence that regions other than the splanchnic area may participate in the phenomenon of circulatory stasis on assumption of the upright posture.

In 1927, Ghrist and Rowntree¹⁵ reported one case of Addison's disease which exhibited an associated postural hypotension. Since then Ghrist¹⁶ has reported the postural reactions revealed by a series of ten cases of Addison's disease. In three (30 per cent) of these cases there occurred such marked fall of blood pressure and rise in pulse rate as to become incapable of determination, and symptoms of impending syncope were experienced as the upright posture was reached.* One other case of postural hypotension associated with Addison's disease was reported by Duggan and Barr¹⁷ in 1931. The marked rise in pulse, associated with severe fall of blood pressure, differentiated these Addison's disease reactions to postural change from those of true postural hypotension cases similarly studied. Failure of epinephrin or ephedrin to relieve the postural collapse in the Addison's disease cases indicated that factors such as small heart size, general muscular weakness,† lack of circulating hormones from the suprarenal glands, etc., probably combine to prevent an efficient adjustment of the circulation to the upright posture. Marked fall of blood pressure on postural change was exhibited by no other individuals or groups of patients so studied.

Postural tests carried out by Ghrist¹⁶ on other groups of patients present evidence that neither

essential hypotension nor undernourishment preclude normal response of pulse and blood pressure to postural change. Also, subnormal rise of diastolic blood pressure (without resultant symptoms) on passive change from horizontal to erect was exhibited by groups of patients with scleroderma, chronic infectious arthritis, and benign (essential) hypertension. The group of ten cases of malignant (essential) hypertension showed marked tendency to diastolic fixation in all postures. Patients with complaints of general weakness were shown capable of initiating normal postural response, but often yielded evidence of fatigue in their mechanism after several minutes' normal maintenance of this function. Symptoms on postural change were seldom produced unless a previous history of this association could be elicited from the patient. Postural studies before and after operation indicated that neither lumbar, nor cervico-thoracic sympathetic ganglionectomy and trunk resection appreciably altered the reaction of diastolic blood pressure to postural change. This latter observation strengthens the contention that the splanchnic area is of major importance in adjustment of the circulation to oppose the effect of gravity.

SUMMARY

The importance of adequate heart output, adequate blood volume and efficient adjustment of peripheral resistance in opposing the effect of gravity on the circulation is noted. Causes for failure of peripheral resistance to compensate for the upright posture are reviewed and the resultant pathologic physiology is discussed. The circulatory reactions in primary shock, emotional syncope and postural hypotension are compared. The danger accruing to the mechanism for postural adjustment from influences such as spinal cord injuries, too light anesthesia, chloroform, the forcing of ether anesthesia, high spinal anesthesia, asphyxia, excessive handling of the intestines, and severe operative procedures is reiterated. The differentiation between true postural hypotension and postural hypotension associated with Addison's disease by the response in pulse rate, is again presented, and the comparative rarity of both conditions in the literature is revealed. The trial of ephedrin in treatment of true postural hypotension is recommended. In searching for subjects who may exhibit defective postural adjustment, individuals exhibiting general weakness as a complaint and postural symptoms in their history are designated as the best potential group for study. The dominant rôle of the splanchnic area in opposing the effect of gravity appears, from the present review, to be strengthened.

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DISCUSSION

BURRELL O. RAULSTON, M. D. (University of Southern California, Los Angeles).—Doctor Ghrist emphasizes here a factor in symptomatology, if not in actual failure of health, that is frequently not recognized. When vasomotor instability is present to a degree sufficient to produce temporary symptoms of circulatory failure to the brain the condition may be recognized and dealt with according to the descriptions given in this paper. There must be a considerable number of patients who complain of lack of strength and endurance, lack of initiative, and lack of well-being, in whom a definite diagnosis is difficult and unsatisfactory, who suffer from mild degrees of the condition described here. A more thorough study of such patients in keeping with the ideas presented in this paper should be of value not only for the sake of a more accurate diagnosis but as a valuable aid in prescribing treatment. Undoubtedly many of the general measures used in treatment of patients who are diagnosed as having "general debility," "constitutional inferiority," and such indefinite conditions improve only because of some plan of management that corrects to some degree this condition of the vasomotor apparatus. If such patients could have the advantage of a more accurate diagnosis they might frequently be spared a considerable amount of drug therapy that is useless and often expensive.

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AUDLEY O. SANDERS, M. D. (U. S. V. A., Diagnostic Center, Palo Alto).—Doctor Ghrist has rendered a definite service by repeatedly calling our attention to

the clinical syndromes of arterial hypotension and by insisting that these syndromes often represent specific disease entities. In the past, far too little recognition has been given to these syndromes. In fact, they have seldom been considered as presenting separate clinical pictures in themselves. Rather, they have been merged into the confused and vague pictures of "neurasthenia," "effort syndrome," "visceroptosis," etc. It matters little what term may be used to identify the group of signs and symptoms characteristic of a disease entity; but it is exceedingly important that such a syndrome be generally recognized as evidence of some definite disease condition. Then, and then only, can advances be made in identifying the underlying pathology and in giving relief or help to the patient.

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THOMAS G. INMAN, M. D. (2000 Van Ness Avenue, San Francisco).—Like many other problems in physiology, the causes which determine postural shifting of the blood quantum, or better, the reason for its not shifting equally in all individuals subjected to similar changes in body posture, may depend upon a number of influences acting together.

In a complex organism like the human body, it is impossible to estimate exactly the effect of a single factor acting upon a mobile structure such as is the blood. There are more than twenty variable factors constantly influencing the movement of this semi-fluid mass. It is possible only to give an approximate estimate of the effect of any one of them at a given time.

The fact that in certain otherwise healthy individuals untoward symptoms follow upon a change from the lying to the standing position, and that notable changes in blood pressure can be detected may, in the present state of our knowledge, be attributed to the effect of gravitation acting in an individual imperfectly equipped to maintain a stable equilibrium under varying changes in body position. The defect may lie in one instance in the vasomotor system, in another in atonic musculature, imperfect respiratory excursions, cardiac weakness, overactive psycho-visceral reflexes, etc. Perhaps it would be safer to look upon the postural blood pressure change as indicating a necessity for further search along the lines suggested by Doctor Ghrist.

Repeated observations lead to the belief that there is a certain type of individual in whom there exists a tardy adaptability to changes from the horizontal to the vertical position, and blood pressure determinations confirm the opinion that symptoms, when present, may be due to a defect in circulatory compensation. The long body, narrow thorax, small, central heart and limited diaphragm excursions point to the susceptible individual. In so far as the effect of gravity is concerned, some observers have suggested that the phenomenon may represent a lack of evolutionary adaptation to the vertical position; but opposed to this view is the fact that in a civilization in which many centuries of evolution are represented, blood ptosis, so called, is observed more frequently in those coming from the upper levels than in the more primitive groups. It may, indeed, be one of the penalties of civilization.

In the search for a permanently effectual therapy for these cases of constitutional postural hypotension too much stress may be placed upon medication directed toward increasing the activity of the propelling mechanism, forgetting that it is the return of the blood to the right heart that is the important matter. Thus, attempts to raise the blood pressure by stimulation of the heart only call for an expenditure of energy on the part of the circulatory system without obtaining a corresponding increase in the efficiency of the structures actually at fault.

Symptoms arising, directly or indirectly, from imperfect adjustment of the circulation of the lower half of the body are more common than is generally recognized and the timely studies of Doctor Ghrist will do much toward increasing our knowledge of the subject.

COMPENSABLE INDUSTRIAL DERMATOSES*

By MOSES SCHOLTZ, M. D.
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DISCUSSION by H. Sutherland Campbell, M. D., Los Angeles; Stuart C. Way, M. D., San Francisco; Stanley O. Chambers, M. D., Los Angeles.

WITH the growth of modern industry the clinical and medico-legal significance of industrial dermatoses grows apace. The introduction of new industrial materials and chemicals supplies an ever new source of occupational skin disability.

Industrial dermatoses, or, as they have been called, ergodermatoses, steadily grow in incidence and amount of compensational claims. The dermatologist is quite often called upon to pass an opinion and render a judgment as to whether a certain dermatosis is of occupational origin and compensable.

Yet there is much uncertainty and vagueness in the definition of the basic concepts and principles guiding the clinical identification of such cases and the evaluation of their compensability. It seems, therefore, timely and of clinical interest to attempt a review and elucidation of this subject.

THEORETICAL CONCEPTS VERSUS PRACTICAL INFERENCES

The analysis of the theoretical premises and concepts advanced by authorities and students of the subject leaves one with the impression of its immense complexity. The theories and hypotheses of allergy and hypersensitization invoked by modern research to explain the pathogenesis of ergodermatoses do not offer any practical help of guiding principles in the problem of evaluation of the compensability of ergodermatoses.

The clinician cannot help feeling that the whole subject of allergy, in spite of the tremendous amount of experimental research and occasional spectacular diagnostic and therapeutic results, is still in its infancy.

Its basic concepts seem to be as yet in a fluid state, and are not clearly cut and differentiated one from another. Thus Doerr, one of the leading theoretical allergists, says (quoted by Coca): "For the terms allergy, anaphylaxis, hypersensitiveness, idiosyncrasy, there is no exact definition, nor is there any that are recognized as even provisionally satisfactory." He regards them as members of the unclassified series not sharply separated one from another. Also Cinser believes that different forms of allergy merely represent different quantitative participation of different factors.

Even the leading students of skin allergy betray this haziness of view. Thus Prosser White, than whom none has contributed more to the clinical study of ergodermatoses, in one place uses the term idiosyncrasy in the generally accepted sense

of hypersensitiveness to a specific irritant; in the other he regards it synonymous with predisposition and diathesis, and draws a detailed table to differentiate it from allergy and anaphylaxis.

Similarly Oppenheimer, another leading student of ergodermatoses, betrays the vagueness and haziness of the allergic concepts in his classification of ergodermatoses. The three types of ergodermatoses suggested by him can hardly be differentiated one from another, but apparently overlap each other. He differentiates anaphylaxis from idiosyncrasy and puts them in different groups of classification. Yet serologists and allergists concur in regarding them as synonymous.

It is surprising how few attempts have been made to formulate the guiding principles and factors to be considered in the evaluation of the compensability of ergodermatoses. The most authoritative and comprehensive treatise in English on the subject, by Prosser White, is an extremely valuable manual, compiling an enormous clinical material. White's classification of ergodermatoses is based essentially on the type of occupational irritant producing the different chemical and pathologic changes in the skin. However, White does not offer to the clinician any system of principles or practical guidance in evaluating ergodermatoses.

Oppenheimer has compiled a similar but more elaborate and illustrated treatise comprising a tremendous clinical experience. Neither does this manual offer any guidance to the clinician. I was not able to find in the literature any systematic analytical study of the various types of ergodermatoses, and various factors to be considered in the evaluation of their compensability.

The modern theoretical concepts of skin sensitization, variously termed allergy, anaphylaxis, idiosyncrasy, or atopy, and the modern technique of skin allergic tests, including the patch test, have rendered matters if anything more complicated.

DEFINITION OF ERGODERMATOSES

The industrial dermatoses, in the usually accepted sense, can be defined as absorption or contact dermatoses caused by any of the physical or chemical occupational irritants, solid, liquid, or gaseous.

Two major factors determine the type and the intensity of the skin reaction; 1, the biologic makeup and resistance of individual skin; 2, the character and the intensity of the occupational irritant.

The clinical manifestation of ergodermatoses may assume the form of a more or less specific traumatic lesion, characteristic for various trades, termed by Oppenheimer as "occupational stigmata." Such are, for instance, stains and coloring, stratifications, excoriations, nail changes, pigmentation, callosities, teleangiectases, brisures, cicatrices and tattooing.

Ergodermatoses more often assume that general nondifferentiated form of the inflammatory skin reaction known under the name of eczema or

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* Read before the Dermatology and Syphilology Section of the California Medical Association at the sixty-first annual session, Pasadena, May 2-5, 1932.

dermatitis. It can be stated here that the consensus of opinion among the modern leaders of dermatologic thought is that these two conceptions cannot be differentiated, neither morphologically nor histopathologically, nor clinically, and that they should be regarded as identical and interchangeable concepts.

The simple type of ergodermatosis which leads to no difficulties in rendering judgment on compensability is one in which the occupational irritant is of unusual intensity, or which, because of unduly long exposure, breaks down the normal resistance of the skin.

The final clinical proof of such ergodermatosis is that the lesions clear up rapidly after the exposure to this particular industrial irritant has ceased.

INFECTIOUS ERGODERMATOSES

A common and clear-cut type of ergodermatosis is that caused by chemical or traumatic irritants and manifested clinically by eczema. To this group belong numerous cases of occupational dermatitis which occur in housekeepers from the irritation by soap and water, in physicians from antiseptics, dentists from novocain, gardeners and orchard workers from substances such as sulphur, arsenic and fertilizers. Ergodermatoses of this type may be acute or chronic, they are easily identified, commonly free from complications, and clear up after the cessation of exposure to the irritant agents. However, bacterial or mycotic infections of various types may be contracted during work, or may develop as a secondary complication. The most common type of infection is pyogenic, staphylococci, streptococci or mixed. However, many other animal and vegetable parasitic infections are observed in many trades where workmen come in contact with animal or vegetable matter. Scabies, pediculosis ventricoides, sporotrichosis, blastomycosis, erysipeloid and other infections occur in stablemen, farmers, gardeners, butchers and allied trades.

Epidermophytosis, because of its almost universal distribution, must be considered separately and not be accepted as occupational, unless under very exceptional circumstances.

Exceptionally, infections such as syphilis can be occupational, such as syphilitic chancres on the fingers of gynecologists and midwives. Chancre on the lip in a glass blower was directly traced to a glass tube of a fellow worker who had syphilitic lesions in the mouth. Ergodermatoses of these types of unusual infections, however, seldom present serious difficulties of establishing their occupational origin.

PYOGENIC ERGODERMATOSES

Pyogenic infection so frequently complicates ergodermatoses, primarily or secondarily, that it deserves to be considered as a separate group. The clinical manifestations of the pyogenic infection are manifold. It may occur as ordinary impetigo, pyogenic folliculitis, furuncle, eczema, cellulitis, or erysipelas. It may start as impetigo and undergo secondary eczematization, or may

develop superimposed secondarily on the occupational dermatitis. In either case the final picture may be very much the same, that of impetiginous eczema.

The paramount importance of irritational and traumatic insults to the skin as an etiologic factor of pyogenic infection was realized and ably emphasized by Engman as early as 1902, and re-emphasized by Fordyce in 1911. He described a new clinical form of eczema which he called infectious eczematoid dermatitis (a somewhat redundant name from a modern point of view), which corresponds morphologically to pyodermites or streptodermites of the French clinicians. He describes it as an eczema with fairly well-defined borders, and a tendency to form heavy purulent crusts and itching much milder than is observed in common eczema. He emphasized the fact that this type of eczema develops after trauma and is likely to spread beyond the area of original occupational irritation, and has a strong tendency to recurrences and fluctuations.

Impetiginous eczemas are a very common sequel to multiple excoriations and erosions incidental in many trades. It is hard to see how the original traumatic or chemical ergodermatosis can be disclaimed as the etiologic factor in the causation of such sensitization to pyogenic infection. The fact that the new attacks of such pyodermites occur after the patient gives up his work, does not, in my opinion, affect the validity of the claim, since ordinary daily life provides manifold opportunities for superficial excoriations and erosions sufficient to rekindle a pyogenic attack.

The sensitization of the skin to pyogenic microorganisms is a well established clinical fact. It is seen in erysipelas and furunculosis. The capacity of streptococci to produce allergic skin phenomena reactions has been demonstrated by Ravaut, who produced allergic skin reactions in cases of pyodermites.

It is plausible, therefore, to assume that the traumatic and occupational insults may bring out the sensitization of the skin to the pyogenic antigens and render the skin susceptible and predisposed to recurrent attacks of pyoderma.

ERGODERMATOSES WITH SYSTEMIC BACKGROUND

Systemic pathogenic factors enter heavily into the problem of ergodermatoses and constitute one of the most difficult factors in the evolution of compensability. Usually the systemic factors serve as predisposing ground on which the occupational noxae, not sufficiently irritating to cause a skin irritation in a normal individual, bring out an acute skin reaction, even if the exposure was not unduly prolonged.

Such systemic predisposing factors may be the so-called eczematous or exudative diathesis, seborrhea, xeroderma or ichthyosis, senility, or any of the systemic dyscrasias such as diabetes, hypothyroidism or syphilis. It may also happen that one of the commonly known occupational skin irritants strikes an individual with the systemic dyscrasia of an excessively dry or exces-

sively moist skin, which conditions render it more vulnerable to chemical and traumatic irritants.

In both cases the induced ergodermatosis is either of greater intensity than it would be in an individual of normal resistance, or, as it often happens, the ergodermatosis assumes a sluggish and chronic course because of the low recuperative power. These cases, more than any others, give rise to controversy and difference of opinion between special examiners and referees of industrial commissions.

Ordinarily, in the beginning, the dermatitis is accepted as industrial. It is only after it fails to clear up, in spite of the cessation of the work, and continues its sluggish course, that the interplay of systemic factors begins to be suspected and the compensability of the dermatosis is questioned.

There is some validity on both sides of the argument. It is true that the prolongation of the disability in these cases is not due to the occupational irritants but to the systemic factors. So, technically, the claim of compensation does not seem to be justified. Yet it must be considered that this disability would not be in existence if it were not caused originally by the occupational irritants.

It seems that the principles of the interplay of the systemic predisposing factors and traumatic insults, and their importance as determinants in the localization of skin lesions are not yet fully understood. It has been clinically and experimentally established that trauma acts as a strong determinant factor of the localization of the systemic toxins or bacterial emboli. This has been strikingly demonstrated by Freed and Siegel, who have produced experimentally in animals multiple trichophytids by the superficial scarification of the skin after intravenous injections of trichophytin.

Prosser White rightly accepts and emphasizes the importance of a traumatic and chemical irritation in bringing out systemic dyscrasias. He cites the case of a syphilitic gummatous ulcer developing on a shoemaker's hand at the site of the pressure of tools. White correctly states that without syphilis he would not have the ulcer, but that also without the friction of the tools he would not develop a sore on his hand. In other words, he still would have his syphilis but would not be disabled by the ulceration precipitated by the local traumatization. To what extent these cases are compensable is a matter of individual opinion. I believe that such cases are partly compensable; that is, they should be compensated until the local lesion causing disability is cured.

It is much harder to evaluate the degree of the compensability in cases in which ergodermatosis is aggravated or rendered chronic by systemic pathology or irremovable systemic disability, such as senility. Following the above cited line of reasoning, I believe that a principle of partial disability, half or a third part of the established rate for the time of the duration of disability, could be adopted in these cases.

DIAGNOSIS OF ERGODERMATOSES

The correct diagnosis of ergodermatoses is not only a matter of clinical interest, but also of considerable economic and medico-legal significance. The identification of ergodermatoses or morphologic features alone is possible only in cases of specific skin lesions called by Oppenheimer "occupational stigmata," characteristic for various trades. The majority of ergodermatoses, however, are manifested by an eczematoid rash, the undifferentiated and protean skin reaction.

It is an accepted dermatologic axiom, enounced first by Benier, that different etiologic factors may produce skin eruptions of the same morphologic type, and vice versa. This is particularly true in cases caused by chemical and traumatic irritants.

Only bacterial and mycotic eczemas present characteristic morphologic group features differentiating them from common contact derma or systemic dermatitides or eczemas. Such features are sharply defined borders, circinate and gyrate shape, clearing center and marginal activity with scaly epidermal collarette or vesicles. Yet this morphologic differentiation is readily demonstrable only in cases of the primary mycotic or bacterial infection. However, infection, particularly pyogenic, is often secondary to a primary contact dermatitis caused by chemical or physical irritants. In these cases, presenting a mixed morphology of infections and contact dermatitis, the identification of the occupational origin of dermatosis on the morphology alone is practically impossible.

Prosser White offers a differentiation table between what he calls traumatic occupational and idiopathic eczema. His differentiation is not convincing, can hardly be of much help to the average clinician, and is not in accord with general clinical experience.

The only differential point which can be accepted without challenge or doubt is that the ergodermatosis increases or decreases in intensity in proportion to the degree of exposure, or the intensity of the occupational irritant and that the ergodermatosis does not recur when the occupational irritant is removed.

PATCH TEST

Up to recently the accepted laboratory tests for establishing the identity of the substance or chemical causing a contact dermatitis were the scratch and intradermic allergic skin tests. Lately a new modification of the same principle in the form of the patch test has been introduced by Bruno Bloch.

Theoretically the patch test is much more rational, as it closely approaches the mechanics of the original occupational skin irritation and merely reproduces it on a small scale. The practical use of it has established its value in a considerable number of cases, but its limitations and weaknesses have also been brought out. This has been well shown in a recent article by Sulsberger and Wise.

Before the patch test is applied, one of the few specific occupational irritants has to be selected among those suggested by the history as the most likely offending agent. The skin reaction resulting, if the test is positive, must be of the same type as the original ergodermatosis. Just as in the scratch and intracutaneous allergic tests, the negative reaction of the patch test is not conclusive because of the possibility of anergy or temporary desensitization. What is more puzzling and embarrassing to a clinician is the possibility of variations in the cutaneous allergy in the various parts of the body. Thus, in cases of eye dermatitis from eye drops or mascara or cosmetics, the arm or chest may show a negative reaction with the patch test. Another confusing phenomenon, pointed out by Bloch, is that in some cases the specific monovalent sensitization gradually induces a polyvalent sensitization to many related and unrelated substances. Furthermore, it was pointed out by Oppenheimer that the patch test cannot reproduce all the manifold conditions under which the original ergodermatosis has developed.

The reports of various observers differ greatly as to practical value of the patch test. Steiner gives only 12 per cent of positive reactions while Sulzberger and Wise claim 50 to 59 per cent of positive tests. At the present state of our knowledge and clinical experience it seems safe to conclude that the patch test is a useful procedure, but is not fool proof.

Whether it can be used as a prophylactic practical test in gauging the sensitivity of the skin of the industrial applicants in various trades to individual occupational irritants remains to be seen. It seems to be worthy of trial as there is nothing better available for the purpose.

One weakness of the patch test, in my opinion, is the static conception implied by it that the skin sensitivity is a stable phenomenon remaining stationary under different endogenic and ectogenic factors, and that it does not take into account the possibility of a fluctuation of the skin allergy under various systemic, somatic, neurogenic and even psychogenic factors.

SUMMARY AND CONCLUSIONS

In conclusion, the following deductions seem to be justified by the preceding discussion.

1. Ergodermatosis is a complex clinical phenomenon. Its pathogenesis cannot be explained by allergy alone.
2. Diagnosis of ergodermatoses cannot be made on morphology alone, but only on the combined evaluation of all factors.
3. The patch test is a useful procedure, but it has its limitations. It should be tried in preventive diagnosis of industrial skin allergy.
4. Systemic pathology of hereditary or acquired nature often complicates ergodermatoses as a predisposing or aggravating factor.
5. In ergodermatoses with a systemic background a partial compensation seems to be warranted.

6. The principle of partial compensation should be introduced in industrial claim adjustment, as in many cases the responsibility cannot be separated between the two factors, industrial irritants and systemic background.

7. The principle of recognizing the trauma as an important determinant of the localization of the systemic metabolic or bacterial toxins must be accepted for a correct interpretation of ergodermatoses.

8. In ergodermatoses with systemic background the compensation is warranted only for the period of duration of the ergodermatosis, but not for the recurrences developing after the cessation of the exposures to occupational irritants.

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DISCUSSION

H. SUTHERLAND CAMPBELL, M.D. (1930 Wilshire Boulevard, Los Angeles).—The paper under discussion adequately covers the subject matter. In conjunction with all other works, however, it only renders the subject of differential diagnosis more opaque than heretofore. However, in spite of the opacity induced by research, some imagine that a claim to advancement is in order.

It would appear that the somewhat extreme differences of opinion regarding compensation awards which exist in the two branches of medicine most concerned, viz., dermatology and surgery, rest solely and fundamentally upon the fact that the accident in dermatology is practically always insidious. It may occur by means of an agent with which the patient has been in contact for years. The claimant himself is often doubtful as to the cause, merely suspecting it. In surgery, on the other hand, etiologic diagnosis becomes a comparatively simple matter, as no person suffering from a broken leg sustained by falling off a ladder while at work has ever been known to express doubt as to what was the actual cause of his incapacitation. Thus the simple difference is that the one is a perfectly apparent accident, the other a somewhat insidious one.

It must be admitted that many dermatological cases come to hand where the differentiation is simple but where one enters into the commoner eczematoid domain, one is often justifiably at a loss in spite of the merits of the patch test—this being so basically, fundamentally and logically because of our incomplete knowledge of the subject matter itself.

It also seems incredible that even today the finding of a fungus sometimes invalidates a proper claim. We have already demonstrated that among certain orange workers presenting paronychia, due to fungi, their occupation was undoubtedly at fault. A further series with which we are at present occupied, all fungus infections, are in some instances proving themselves to be due to occupation.

In previous years the salient diagnostic feature of occupational dermatitis was its distribution. This fundamental has apparently been taken away from us following reports on regional sensitivity by more recent workers.

Much has been said and written which appears to be vastly concerned with the matter of unjust compensation awards as applying to the interests of the insurance companies. The safeguarding of the claimant, apparently a negative consideration, is perhaps decidedly quixotic. Nevertheless, it must in all fairness be conceded that insurance companies undertake the risk of compensation for monetary consideration. It would appear in the face of the foregoing that cold, unemotional logic points to awarding for the claimant in the face of a definite and reasonable degree of suspicion, inasmuch as proof is often impossible of attainment. Unfortunately it sometimes appears that the reverse obtains and it is perhaps to be expected under circumstances which obviously demand a greater degree of courage to affirm claims than to negative them.

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STUART C. WAY, M. D. (490 Post Street, San Francisco).—This paper brings to our attention a subject, endlessly disputed, whose solution lies in the distant future, if at all.

Certainly much could be done in simplifying the problem by making:

1. *A Correct and Early Diagnosis.*—Trained specialists alone can accomplish this, by a careful review of each case, giving the necessary attention not only to the irritants encountered at work, but those at home. The age of the patient, the type of skin, internal factors such as food and an accurate history of previous skin trouble all enter into the solution of the problem.

2. *Thorough Laboratory Examinations.*—The Kline precipitation test now renders the exclusion of lues a matter of minutes and is proving very reliable. Gummata due to traumatism are often unrecognized. Scabies, too, is responsible for many of our cases of alleged cement, lettuce and poison oak dermatitis.

3. *The Patch test* has its limitations, but some of these can be overcome by recalling that susceptibility is not a permanent state but subject to internal and external influences such as diet, focal infection and the elements. Also sensitization may be present in one area of the skin and absent in other areas.

4. *Compensation* in the ergodermatoses should be governed by the actual damage done to the patient rather than by the duration of the injury which is often prolonged by extraneous factors, overtreatment, etc. Because of increased vulnerability of the skin after forty, age becomes an important factor and accounts for the chronicity of many dermatoses. Recurrences are sometimes accounted for by home contacts.

5. *Disputes* in handling and in the status of industrial dermatoses could be appreciably reduced by a careful rating of the worker according to age, physical condition and previous skin troubles.

6. *Protection* against irritants encountered in the industrial world should be studied by qualified men and the knowledge gained imparted to those concerned.

Insurance companies should realize that it is much less expensive in the end to have dermatologic cases seen by qualified, experienced dermatologists. Disability is often prolonged by faulty diagnosis and maltreatment.

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STANLEY O. CHAMBERS, M. D. (1260 Roosevelt Building, Los Angeles).—The absence of an etiologic understanding in many common dermatoses leads to theoretical, though just conclusions. It is often necessary in dermatologic practice to associate a clinical picture with environment in determining causation. This is particularly true in the study of so-called industrial or occupational skin diseases. Our medical fathers had no alternative. Methods of investigation had not been identified. Medical progress, however, has opened a field which promises even greater prac-

ticality and accuracy than has so far been developed. This new phase of investigation in occupational dermatoses has been well brought out in Doctor Scholtz's discussion. The clinician now need not only suspect a relation between cause and effect, but with little difficulty can demonstrate it.

The clinical similarity between certain mycotic infections and so-called diathetic eczema to that dermatitis produced by contact irritants has undoubtedly, in the past, lead to error and unjust compensation.

EPILEPSY IN CHILDREN*

WITH PARTICULAR REFERENCE TO THE
KETOGENIC DIET

By HOWARD R. COODER, M. D.
Los Angeles

DISCUSSION by J. M. Nielsen, M. D., Los Angeles; William Palmer Lucas, M. D., San Francisco; Henry Douglas Eaton, M. D., Los Angeles.

THE following report is based upon one hundred cases of epilepsy in children up to twelve years of age treated in a special clinic of the Los Angeles Children's Hospital during the past three years. The proportion of these one hundred cases to a total of seventeen thousand admissions to the General Clinic is 0.6 per cent, which corresponds to statements that the incidence of epilepsy in children is from one-half to one per cent. Our one hundred cases have been classified as follows:

Major epilepsy (grand mal).....	52
Major and minor epilepsy.....	16
Minor epilepsy (petit mal).....	14
Jacksonian epilepsy.....	6
Pyknolespy.....	4
Hystero-epilepsy.....	2
Epileptic equivalents.....	6

Major Epilepsy.—Major epilepsy includes the majority of the cases. The onset is sudden, sometimes with a warning, or aura, in a very few with a cry. In nearly all major cases loss of consciousness is early and complete. The child may fall, but as many children have their attacks only at night or during naps or while playing on the floor, the fall is not always a part of the attack. Tonus and clonus may supervene in order, but more frequently occur together in quite irregular fashion. Attacks last from one to five minutes in most cases, occasionally longer. Sleep of an hour or less usually follows and a few children are fretful or otherwise perturbed for a few hours to a day afterward, but many recover quickly and go about their activities without showing that they have had a convulsion.

A number of our patients have both major and minor attacks, sometimes frequent minor with an occasional severe attack, sometimes an equal number of both. A few who formerly had only one type now have only the other type; it happens that of our patients there are more who have passed from a former major epilepsy to a present minor epilepsy.

Petit Mal.—The minor type of epilepsy, or petit mal, includes a large number of transient seizures,

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spells, lapses of short duration, from a few seconds to a minute. There may or may not be loss of consciousness, the eyes roll up, a passing shudder or stiffness occurs. Although the minor attack is not nearly so long or so severe as a major seizure, the postconvulsive sequelae of sleep, mental confusion, or fretfulness are just as likely to occur, and it appears that the ultimate effect upon the personality and mentality of the child are as much to be feared from the one variety as from the other.

Jacksonian Epilepsy.—Jacksonian epilepsy in our six cases has conformed to the classical description of spasm beginning in an extremity of one side and successively involving the muscle groups of that side, consciousness not being lost until the convulsion has become generalized.

Pyknolepsy.—Pyknolepsy is remarkable for the great number of spasms of a very minor nature which may occur in one day, as many as a hundred or more. They consist of a transitory staring, turning up of the eyes, blankness, stopping of activity, of not more than ten seconds' duration. It is difficult to say if there is loss of consciousness; there is never any convulsion. The condition is described by Sachs¹ and also by Thomson² in almost identical words. It is very resistant to treatment, but tends to disappear by itself after more or less time. It is probably not epilepsy at all, nevertheless a case of it deserves to be watched until it has been differentiated from the more serious disorder.

Hystero-Epilepsy.—Hystero-epilepsy describes seizures which are identical with epilepsy in many ways, but which occur only under circumstances of stress, emotion, or while the patient is under examination, a thing which seldom is true of genuine epilepsy. It is not nearly so common in children under ten as in those of adolescent years or older. We have had two cases.

Epileptic Equivalents.—Epileptic equivalents include a number of conditions other than seizures which, by their periodic occurrence, their involuntary nature and occasional development later into true epilepsy, require treatment as for the latter. Attacks of mental confusion, transient changes in disposition, certain hallucinations similar to auras, and migraine, may be considered under this heading.

ETIOLOGY

For many years neurologists and pathologists have sought unsuccessfully for a characteristic lesion of brain or nerve substance. More recently the causes of epilepsy have been pursued in the avenues of biochemistry, endocrinology, psychology, without an answer to the problem. Etiology is thoroughly reviewed in the monograph by Lennox and Cobb.³ There are many theories of cause, no one much better than another. As these authors say, we are in need, not of more theories, but of more facts. Researches like the work of L. O. Morgan,⁴ who has produced epilepsy in animals by injecting destructive substances into certain nuclei at the base of the brain, are a definite help. In the end it may come, as Hughlings-

Jackson said forty years ago, to the fine point of recognizing the difference between cells which react with convulsions and cells which do not.

TREATMENT

The really great advances in the treatment of epilepsy have been made in the last ten years by the researches of biochemistry and metabolism. They include: fasting, dehydration, and the ketogenic diet.

These methods have been suggested by clinical observation and laboratory study of body conditions before and after fits, by attempts to produce sedation, and by careful correlation of the successful results of all forms of treatment.

Fasting.—Fasting is one of the many forms of treatment which has been in more or less use for years, but it received its first serious examination by Geyelin⁵ in 1921, who studied twenty-six cases upon fasts of twenty days. Fasting is an effective dehydrating measure and causes ketosis. As a sole method of therapy it is discountenanced by some workers. In small children it certainly cannot be maintained for more than a few days at a time. In cases which we have selected for special study we have found that a five-day fast is an excellent way to introduce the ketogenic diet.

Dehydration.—For a long time the finding of edema of the brains of epileptics at autopsy, and of "wet brains" when epileptic patients were operated upon for decompression or exploration, has focused attention upon the possible advantages of limiting the water intake of these subjects. More recently this matter has been studied by McQuarrie,⁶ who has been able to effect cessation of convulsions by restricting water and increase of convulsions by forcing fluids. It is a form of treatment difficult to maintain with children, unless they are in bed, because the fluids have to be limited to no more than 200 to 300 cubic centimeters per day. As a single method of treatment, we do not consider it superior to the ketogenic diet, and we have shown in some twelve to fifteen cases kept in the hospital for a trial period that the diet will produce just as effective dehydration as water restriction. Dehydration is, nevertheless, an important underlying cause or result in several forms of treatment and deserves consideration.

The Ketogenic Diet.—This was developed in 1921 by Wilder⁷ from his experiments with fasting, in order that he might prolong ketosis which he had noticed was a constant occurrence in patients upon a fast. The ketone bodies, acetone, aceto-acetic acid, and β -oxybutyric acid are produced in the body under certain abnormal conditions, as the acute febrile illnesses of children; also they occur promptly upon a complete fast and upon a diet high in fat and low in carbohydrate. In the latter case it is the incomplete hydrolysis of excess fat which results in the ketone bodies. Persons vary in their ability to burn fat, and of a number of children upon the same ratio of ketogenic diet the majority will show a strong acetone reaction in the urine, while a small number will exhibit a slight or inconstant excretion of acetone. Heinbecker,⁸ working with a group of Eskimos

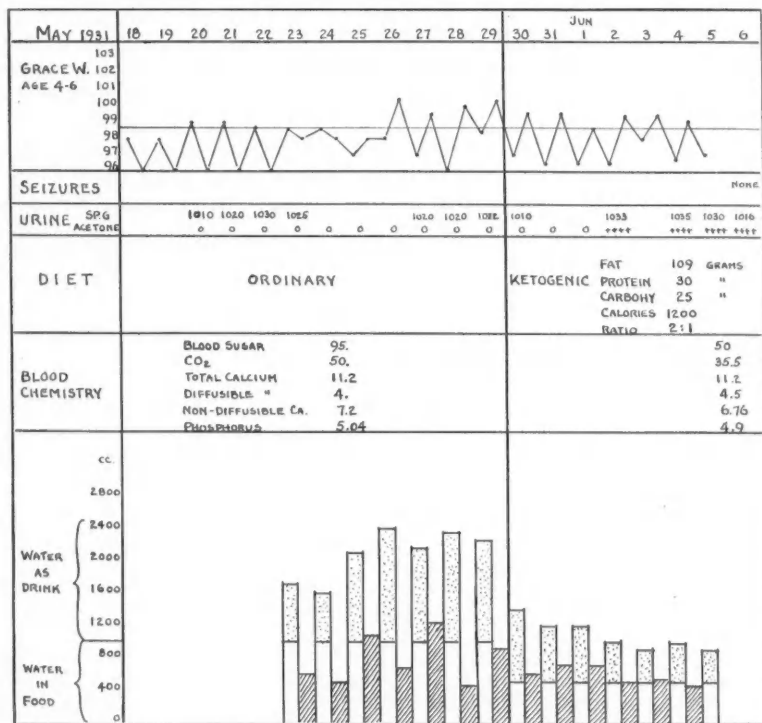


Chart 1.—Chart showing the prompt reduction of water intake and output upon beginning the Ketogenic Diet.

upon experimental starvation, found that they developed no ketosis whatever.

Ketosis is present for months at a time in our patients without presenting any of the unfavorable symptoms of its related state, acidosis. Of ten cases upon whom the CO_2 combining power of the plasma has been determined, only one showed a low figure (35 vols. per cent); there was, however, no clinical evidence of acidosis.

Prescribing a ketogenic diet is greatly facilitated by the use of a table such as that in the book by Talbot,⁹ which gives a complete discussion and instructions. We set the figure for protein at a minimum of 1.5 grams per kilogram of body weight. The majority of children do not complain, and only two of one hundred have been made ill by the unusual food. Much of the success of this work is due to the skill of our special dietitian in designing various alternatives and frequent changes, so that the children are kept interested.

Within three days acetone appears in the urine and its presence is used as a test of whether the patient is eating all of his diet and is eating nothing else. It is an easy test and is fairly reliable; nevertheless a few of our patients who have been very careful, and who have been free of attacks for a long time, have seldom or never showed any acetone in the urine. Within the first week there is nearly always a loss of three to five pounds weight, due to dehydration. The patients all soon show physical improvement, better color, better expression and tissue turgor, and a number of

minor betterments are usually reported by the parents, many of which are merely the results of a more systematic way of living. The patients report to the clinic at first once a week, then every two weeks, and when attacks are finally stopped, once a month. After a year of freedom from seizures we allow them to resume gradually an ordinary diet. Of our series there have been no relapses, but our number is too small to make a pronouncement upon this matter.

The ketogenic diet has now been in use for nearly ten years,¹⁰ and it may fairly be said to be the most valuable single therapeutic measure in the present list for the treatment of epilepsy. Its superiority is not only because of its greater effectiveness, but because it can be continuously maintained for an indefi-

nite period, while some of the other forms of treatment cannot be.

Phenobarbital (Luminal).—We use this drug only as a supplement to the ketogenic diet when the latter has been on trial for three months without producing improvement in attacks. Helmholz and Keith¹⁰ have stated that these two forms of treatment often effect a better result than either one alone. We give one, or one and one-half grain doses at bedtime, and occasionally an additional three-fourths grain in the morning. There have been no disturbing symptoms with phenobarbital as high as three grains per day over periods of many months. Only one child developed a rash.

Clinical Management.—It is important to use persistence in treating epilepsy, either as private patients or in clinics. Our successful patients may roughly be divided into three groups: those whose attacks stop promptly and completely at the commencement of the diet; those whose attacks gradually diminish to zero; and those upon whom the treatment seems to make no effect until weeks or months later, when their seizures may be suddenly and effectively terminated. It does not seem to be possible to foretell what will be the success of any one case.

If a patient misses two visits to the clinic, a social service worker is sent to use every effort to get him to return. Of fifty-five patients who have left our clinic before being discharged, we have reports on the present condition of forty-seven; only one is said to be free of attacks, the majority are still having them, and a few are im-

proved. This shows that with those who have left treatment there has not been a trend to spontaneous recovery.

ANALYSIS OF RESULTS

Total patients received in three years by the clinic, 100.

Patients at present under observation, 45.

Recent patients (less than three months), 7.

Patients treated more than three months, 38.

Patients free of seizures more than three months, 19, or 50 per cent.

Patients improved, 13, or 34 per cent.

Patients not improved, 6, or 16 per cent.

SUMMARY

A report is presented of one hundred cases of epilepsy treated in a special clinic of the Los Angeles Children's Hospital.

A distribution is made of these cases into clinical varieties of epileptic seizures, which are described.

Etiology is still in the theoretical state and is not discussed in this paper.

Of treatment the metabolic methods are described. Fasting is effective but impractical. Dehydration is important and may be the underlying factor in all successful treatment. Water restriction is difficult to carry out. The ketogenic diet has been the method of choice because of its superior effect and its practical nature. Phenobarbital has been used in conjunction with the diet.

Some points of clinical management are emphasized.

An analysis of results is presented.

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DISCUSSION

J. M. NIELSEN, M. D. (1253 Roosevelt Building, Los Angeles).—It has been my privilege to see many of these patients with the author for the purpose of separating those with organic central nervous system pathology from the so-called idiopathic group. In a considerable percentage of patients one can discover evidence of brain damage: birth trauma, encephalitis, meningovascular lues, various degrees of agenesis, etc.

When the condition of the patient justifies it surgical intervention is attempted; but when years have elapsed since an obvious injury surgery is ordinarily useless and the treatment resolves itself into the treatment of idiopathic epilepsy (symptomatic therapy). It is along this line that the author has done a great deal of work.

The surprising fact has been demonstrated that a symptomatic epilepsy responds to dehydration and ketogenic diet just as well as or even better than an idiopathic one.

In adults dehydration is apparently the most potent single factor in the treatment. But in childhood, in cases of home treatment, it is almost impossible to carry out. We have gone to the extreme of removing all faucets in the home, only to have the child steal water outside. In our private practice we urge restriction of fluid intake, but do not rigorously enforce it in children. On the other hand, the ketogenic diet which does relatively little good in adults is a potent remedy in childhood, as the paper well demonstrates.

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WILLIAM PALMER LUCAS, M. D. (490 Post Street, San Francisco).—Doctor Cooder's analysis of the one hundred cases of epilepsy which they have treated at the special clinic of the Los Angeles Children's Hospital represents a fine piece of clinical research investigation. It is from this type of work that we get our most accurate and fundamental knowledge of these most difficult cases. It is entirely a different problem to straighten out a case of epilepsy in the hospital, where you have the patients under absolute control, than when they are at home, or supervised from a clinic.

In regard to the treatment advocated by Doctor Cooder, I think he has been very conservative in his estimate of the various types of treatment. There is no question but that the ketogenic diet in many cases has proved its value. It is very much more difficult to carry out restriction of water intake in private practice and in clinic patients than it is while the patient is in a hospital bed, where absolute control can be kept over the water intake. However, with coöperative patients, a good many will stay on the low fluid intake. These patients usually are the ones that show the greatest reduction in the number of seizures, but unless we have the coöperation of the family and the child it is almost impossible to carry out the dehydration treatment.

I think everybody is of the opinion that phenobarbital should be used in conjunction with both the dietary and dehydration treatment.

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HENRY DOUGLAS EATON, M. D. (1136 West Sixth Street, Los Angeles).—The treatment of epilepsy has always been a discouraging matter. Ketosis and dehydration have unquestionably demonstrated their value as therapeutic agents. Doctor Cooder's excellent paper proves the practicability of using this type of treatment successfully in an out-patient clinic. His results compare very favorably with those obtained with hospital control of the patient and with results in private cases, where one would perhaps expect more intelligent coöperation from the families.

In my own practice I do not use the ketogenic diet in adults, but find it valuable in children. In adults, fluid restriction, combined with medication, has proven of most value. Medication alone will control convulsions in a definite percentage of cases without apparent deleterious effects.

The author is to be congratulated on a careful and valuable clinical study. It is to be hoped that he will publish his further observations.

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DOCTOR COODER, (Closing).—All of the doctors, in discussing this paper, have stressed dehydration as a form of treatment. It is not agreed by all investigators, however, that dehydration is the final factor which brings about the cure of epilepsy. Following water loss there may be more particular changes, *e. g.*,

alterations in mineral balance, as has been brought out by the work of Bridge and Job. Voluntary limitation of water intake is difficult to teach to children, and its enforcement in a large clinic throws too much dependence upon the self-control of the little patients. It has been shown that the ketogenic diet brings about a lessened intake of water equal to what can be accomplished with fluid limitation and with no persuasive effort.

The ketogenic diet has its percentage of failures, but it is the most successful single therapeutic measure today and it can be safely continued over a long time.

I agree with Doctor Nielsen that cases of Jacksonian epilepsy, in spite of their one-sided and focal manifestations, respond just as well to this treatment as the generalized, idiopathic type.

ACUTE PERFORATED PEPTIC ULCERS*

A CLINICAL REVIEW OF ONE HUNDRED AND FIFTY-FIVE CONSECUTIVE PATIENTS TREATED SURGICALLY

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AND

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DISCUSSION by Burns Chaffee, M. D., Long Beach; John Homer Woolsey, M. D., San Francisco; Thomas O. Burger, M. D., San Diego.

ACCORDING to Watson,¹ the earliest account of a perforated gastric ulcer was presented to the Royal Society in 1729 by Christopher Rawlinson. In this country O'Hara² reported the first example to the Philadelphia Pathological Society in 1875. The first successful surgical excision of a perforated duodenal ulcer was reported by Dean³ in 1894. Since that date an ever-increasing amount of literature has accumulated which crystallizes our thoughts as to early diagnosis and treatment.

The subject-matter for our present study was obtained from a careful clinical review of 155 consecutive patients with acute perforated peptic ulcer. These patients were treated surgically by the San Francisco Emergency Hospital Service.

What is the probable incidence of acute perforations among patients with a proven peptic ulcer? In 1911 W. J. Mayo⁴ reported the occurrence of twenty-five perforations among a series of 272 proven peptic ulcers (10.9 per cent). Trout⁵ in 1928 reported a definite increase in acute perforated ulcers among the enlisted men of the United States Army stationed at Hawaii. The incidence increased from one in forty-one (2.5 per cent) in 1922 to one in seven in 1926 (14.4 per cent). Such statements show that the danger of perforation is a factor of considerable importance.

CENSUS OF THE GROUP

This disease is found most frequently in the lower social scale of life, for these individuals as a class are less likely to have proper dietary and medical supervision for their indigestion. This

type of patient also is more likely to have poor oral hygiene, and other foci of infection.

Perforated peptic ulcer may occur at the extremes of life. Cecil Finney reports a case in an infant two months old. Our oldest patient was a man of seventy-two years of age. Our series shows the disease to be one of early adult life. The average age was forty years, while about 60 per cent of the patients were in the third and fourth decades of life. Ninety-five per cent of the patients in our series were males.

FACTORS PROBABLY CONTRIBUTING TO THE CAUSE OF ACUTE PERFORATION

1. *Family or Individual Predisposition to Development of Ulcer.*—Among our patients there were three instances where other members of the family had acute perforated ulcers. Two patients reported in this series have each had three emergency operations for this same disease.

2. *Septic Foci and Upper Respiratory Infection.*—It was very noticeable that the majority of these patients had poor oral hygiene, which many investigators believe to be an initiating or aggravating factor in the disease. Of equal significance was the apparent seasonal variation, for 70 per cent of our patients were admitted during the six-month period of winter and spring when acute upper respiratory infections are most prevalent.

3. *Improper Dietary and Medical Supervision.* The social status of these patients as a group precludes satisfactory dietary regimen and intelligent medical supervision of their ulcer problem.

4. *Indiscretion of Diet and Alcoholism.*—In many patients of this series, perforation occurred immediately following an eating or alcoholic drinking orgy. One patient suffered perforation after complying with a fake ulcer "cure" which consisted of a twenty-one-day fast broken by the ingestion of one gallon of milk.

5. *Sustained Physical Effort.*—There seems to be some relation between sustained physical effort and exacerbation of ulcer symptoms and perforation. In several patients of this group, perforation occurred suddenly during the hard physical exertion required by their occupation, but they were unsuccessful in contesting their cases before the Industrial Accident Commission.

CLINICAL PICTURE

Each of us no doubt can recall vividly our first patient suffering from acute perforated peptic ulcer. The initial symptoms and signs may be reviewed by quoting Moynihan's accurate and vividly expressed observation of the catastrophe:

"When perforation occurs there is a sudden onset of the most intolerable agonizing pain. The pain is hardly exceeded in severity by any that a human being can suffer; the extremity of agony is reached. So profound may the instant impression be that death results. . . . The patient is always prostrate with agony; the eyes are wide and watchful; beads of sweat stand out upon the brow and the lines are quickly graven on the cheeks. The patient breathes shortly and quickly; he cannot take a deep inspiration. . . . the attempt to do so ends in a groan or shout of agony and a spasm of pain. The answers to one's questions are given in snatches and every expiratory phase ends

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* Read before the General Surgery Section of the California Medical Association at the sixty-first annual session, Pasadena, May 2-5, 1932.

abruptly in a catch. . . . It will be found that the abdominal wall is tight; it is held with a rigidity that never for one moment slackens."

HISTORY

Of what significance is the history of previous peptic ulcer? The majority of these patients will give a history of previous indigestion of varying intensity over a variable length of time. In our own series of 155 patients we were able to elicit a history of some indigestion in 122, or 80 per cent, although many of this group gave a history absolutely negative for peptic ulcer when questioned immediately before surgery. During the agony of the acute attack many of the patients discount entirely or greatly minimize any previous discomfort from indigestion. Hence very often we find the immediate preoperative history surprisingly negative. Of still more significance is the fact that thirty-three of our patients, or 20 per cent, even in the calm of convalescence could recall no symptoms even suggestive of peptic ulcer. That is to say, the acute perforation was the first indication of ulcer. We cannot stress too strongly this well established clinical fact: that a very considerable number of these patients will give a history absolutely negative for ulcer. The physician's apparent lack of knowledge of this fact probably accounts for most of the serious and oft-times fatal errors in diagnosis.

PROGRESS OF THE DISEASE

Probably no other disease develops with such dramatic suddenness as does acute perforated ulcer. This disorder is unique also in that after a few hours a reactionary period develops and the diagnosis often becomes confusing. If an error in diagnosis still is made, the picture gradually develops into one of advanced general peritonitis. These three phases of the disease will be discussed.

First Stage.—The first stage is that of onset or primary shock which usually lasts from one to two hours. During this period the patient complains bitterly of constant, agonizing, knife-like pains which begin in the epigastrium and rapidly spread over the abdomen. The pains usually are referred to one or both shoulders, to the infraclavicular regions, or around the costal margins. Physical examination at this period reveals essentially those findings observed in primary shock. The skin is cold and clammy, the pulse weak, and the temperature usually is subnormal. There is a moderate leukocytosis and an increase in polymorphonuclear elements. The respirations are jerky, shallow, and thoracic in type, and a deep inspiration usually ends in an expiratory grunt and an exacerbation of the pain. Palpation of the scaphoid-shaped abdomen reveals a complete general rigidity of the abdominal muscles. The term "board-like rigidity" describes well the condition which is almost pathognomonic of this disease in its early stages. Other evidences of general peritoneal irritation are present, such as abdominal, rectal, and "rebound" tenderness.

Nausea and vomiting occurred in 13 per cent of the patients of our series. In most cases the vomiting was nonproductive, but in others the

vomitus showed bile or gastric contents. In but two cases was coffee-grounds vomitus recorded, and in no instance was there hematemesis or melena.

Second Stage.—The second stage or reactionary period usually develops between two and twelve hours after the onset of perforation, and is the period when the patient usually first comes under medical observation. He still complains of abdominal and referred pains, but they are less severe. The alarming evidence of primary shock is less noticeable for there is an apparent improvement in the general status of the patient. The temperature and the laboratory findings are essentially those of the first stage. There is, however, the clinical picture of an acute peritonitis resulting from contamination of the abdominal cavity by the gastric content and acid chyme. Also there are the superimposed symptoms and signs of an acute pneumoperitoneum. The anatomical landmarks such as lumbar gutters, roots of mesenteries, etc., help to determine the nature and direction of the spreading peritonitis. Hence, after several hours, we are very likely to find the signs of peritonitis localized to the right lower quadrant, and an erroneous, and often fatal, diagnosis of acute appendicitis is made, the real pathologic changes not being suspected or recognized. Occasionally the peritonitis is so localized to the right upper quadrant that a diagnosis of acute cholecystitis is made, and proper immediate operation is deferred. In any instance where the diagnosis is still in doubt, an x-ray film taken with the patient in a sitting posture usually will reveal the presence of a pneumoperitoneum. In several instances this very valuable diagnostic aid has been most helpful to us in arriving at the correct diagnosis. (The importance of these findings has been stressed by Vaughan and Singer,⁶ who report a correct diagnosis by this means of 87.5 per cent in a series of seventy-two proven perforated peptic ulcers.)

The physical examination of this second period is otherwise essentially that described in the first stage. The rigidity may be more localized to the epigastrium, the right upper or the right lower quadrant of the abdomen. Percussion often reveals a diminished liver dullness and some evidence of shifting dullness in the flanks.

Third Stage.—The third or final stage develops insidiously after twelve hours and presents the typical picture of a progressive general peritonitis with the associated paralytic ileus. The very high mortality of patients first treated in these late stages is, of course, the mortality of late neglected peritonitis.

DIFFERENTIAL DIAGNOSIS

What are the errors of diagnosis which are most likely to confuse the picture and hence delay the urgent surgical treatment which is necessary? In our experience, acute inflammation of the gall-bladder, of the appendix, and of the pancreas have simulated most frequently the physical examination and findings during the second stage of the disease. The probable reason for this similarity we have already considered. Occasionally an early

intestinal obstruction also will give similar findings. Likewise, we have had several instances of acute severe alcoholic gastritis in noncoöperative patients which have simulated very closely the abdominal findings of acute perforated peptic ulcer. The x-ray examination referred to has given us the correct diagnosis in most of these problems, while in others, fortunately, an early exploratory laparotomy revealed the pathologic changes present.

PROPHYLAXIS

The prophylaxis of this disease should of course be directed toward eradicating all possible etiologic factors which are said to cause or aggravate peptic ulcers. These efforts should include careful attention to foci of infection, dietary and medical regimen. This same therapy should be given to our ulcer patients following operation in order to minimize the tendency to recurrence, which is so prevalent.

TREATMENT

The treatment of the acute perforated ulcer by immediate surgery is universally accepted as the method of choice. Delayed diagnosis or temporizing measures in this clinical entity is, as Cope⁷ says, "equivalent to a death sentence with very slight chance of reprieve." It is true, however, that perhaps a small number of these patients might survive if intelligent, conservative therapy were instituted promptly. With such a precarious line of treatment, we are gambling that the ulcer will become sealed automatically, as it does occasionally, to the undersurface of the liver or adjacent viscera. We have had the opportunity to see several such patients make a complete and rapid recovery without surgery. Accordingly, we must not be too dogmatic and pessimistic in our prognosis to those patients who refuse proper surgery on account of ignorance or religious (?) scruples.

Type of Anesthesia.—These patients as a class are excellent surgical risks if operated upon within twelve hours, irrespective of the type of anesthetic used. As soon as anesthesia is established, the pulse usually improves and the patient will tolerate well any major gastric surgery contemplated. Where there are no contraindications to its use, we use spinal anesthesia as the anesthetic of choice. The complete relaxation obtained by its use has shortened the time needed and has facilitated both operation and closure.

SURGICAL PROCEDURES

1. *Pathologic Changes.*—Upon opening the abdomen through an upper right rectus incision there is usually an escape of air under tension. The peritoneum is injected acutely and the abdominal viscera are bathed in a large amount of bile-stained, mucoid transudate. As 95 per cent of peptic ulcers are located near the pylorus, this region is explored first. The lesion usually is recognized easily as a perforated peptic ulcer which is surrounded by fresh fibrinous exudate. The size and chronicity of the ulcer found will bear a direct ratio to the duration of clinical symp-

toms. Fortunately, in most instances perforation occurs when the stomach is empty; hence the cultures are not grossly contaminated and are frequently sterile. The pathologic picture presented is essentially that of an early chemical peritonitis with an associated acute transudate.

2. *Type of Operation to Be Performed.*—We feel that during the first eight-hour period the patient is usually well able to stand major gastric surgery if such be indicated. After this period surgeons agree that simple closure of the ulcer is the operation of choice.

There seems to be a growing tendency to do a routine simple closure even in the earlier period. With many of our patients so treated, the final results were most satisfactory. The rationale of such a procedure is evident when we consider the relative frequency of recurrence of ulcer symptoms after all types of gastric surgery. Is it not probably better surgical judgment to do the simplest procedure first and reserve the more radical surgery for a second attempt when the patient can be studied and prepared more carefully?

The chief indications for more radical surgery, such as pyloroplasty or gastro-enterostomy, are in those patients in whom simple closure might cause a pyloric obstruction, either immediate or remote. With our patients the pyloroplasty done in most instances included an excision of the ulcer. The closure was made usually with inverting double mattress sutures of fine chromic catgut, and the line of closure further reinforced with the gastro-hepatic omentum.

The advocates of simple closure alone have much in their favor, for such a life-saving procedure can be done in a few minutes by even a novice in surgery, whereas an attempt to do the more radical operations might jeopardize the patient.

In our series there were sixty-seven simple closures, thirty-three pyloroplasties, and fifty-five gastro-enterostomies.

In this entire group of patients no intraperitoneal drainage was used. We are convinced that drainage of the abdominal cavity, at least in this type of peritonitis, is contraindicated and that the drain serves only as a foreign body which produces intra-abdominal adhesions. (We do, however, drain the abdominal wound routinely.)

Postoperative Treatment.—We have found that the satisfactory convalescence was aided if nothing was given by mouth for forty-eight hours; after that time an increasing diet was given, up to a modified Sippy type at the end of two weeks. During the first forty-eight hours glucose (10 per cent, given intravenously, and saline infusions maintained the fluid intake. During this same period a nasal tube apparently lessened the tendency to nausea and gastric dilatation. Upon discharge from the hospital these patients should be warned of the dangers of recurrence, and should be advised of the principles of prophylactic therapeutics.

Mortality and Cause of Death.—Probably in no other disease is early diagnosis and immediate

surgical intervention so essential to a favorable prognosis.

In our series of 155 patients there was a gross mortality of 25 per cent. Of 117 patients who were operated upon within ten hours after perforation there were fifteen deaths or a gross mortality of 13 per cent. There were thirty-eight patients operated upon more than ten hours after onset of acute perforation, with a gross mortality of 64 per cent. This very significant increase of gross mortality from 13 to 64 per cent, of course, is the high mortality of delayed treatment.

The causes of death were as follows: peritonitis, 50 per cent; pneumonia, 20 per cent; cardiac disease, 30 per cent. The relative high mortality in this type of gastric surgery is in a large measure the result of such complications, which are so common among those patients who are in poor health from dissipation or disease.

CLINICAL RESULTS

We have been able to follow the postoperative course in 46 per cent of patients in this series and our results may be summarized as follows:

1. Eighty-five per cent of the patients reported themselves either entirely free of ulcer symptoms, or evidences of recurrences were promptly controlled by dietary measures.

2. The incidence of recurrence of ulcer symptoms was about the same after each type of operation performed. We do note, however, that simple closure of the recently developed acute ulcer generally effected a cure. Such a procedure with the more chronic callous ulcer, however, was not sufficient, and further medical or surgical care was the rule.

3. Those patients who reported a return of ulcer symptoms were almost invariably guilty of gross neglect of the various prophylactic measures outlined above.

4. The recurrence or persistence of ulcer symptoms is occasionally the result of multiple ulcers which were not searched for at the time of the emergency operation.

5. X-ray examination usually will show a persistent deformity of the duodenal cap after operations in this area, even though the patient is free of symptoms. Accordingly, proper evaluation of these findings is very essential in any follow-up studies of these patients.

6. We are convinced that the best ultimate results of any gastric surgery will be among those patients who receive the most careful medical supervision of their ulcer problem.

SUMMARY

1. The incidence and danger of perforation is a very important factor in the ulcer patient.

2. Acute perforation is most prevalent among those individuals who have improper management of their peptic ulcer problems.

3. A negative preoperative ulcer history is a very common observation.

4. An acute perforation was the first clinical evidence of the presence of a peptic ulcer in 20 per cent of the 155 patients reported in this series.

5. The clinical history, physical findings, and differential diagnosis are discussed.

6. Immediate laparotomy with closure of the perforation is the treatment of choice.

7. If operation is done within eight hours after perforation these patients are usually excellent surgical risks and major surgery is tolerated well.

8. If operation is done later than eight hours after perforation, simple closure alone is indicated.

9. Drainage of the abdominal cavity was not used in any operation of this series.

10. The mortality of this disease is essentially the mortality of delayed surgery with resultant peritonitis.

11. Follow-up records of the patients in this series show that with reasonable dietary care 85 per cent of satisfactory cures can be expected after all types of gastric surgery.

12. The type of the operation performed does not seem to influence the incidence of recurrence in comparable cases.

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DISCUSSION

BURNS CHAFFEE, M. D. (406 Professional Building, Long Beach).—The keynote of this paper is the importance of early diagnosis of acute perforated peptic ulcer. With all the accumulated knowledge we have of acute abdominal conditions, we have not lowered the death rate of these patients very materially. The chief reason is that early diagnosis is not made, or that the patient or the relatives will not cooperate with the attending doctor. Usually the diagnosis is not difficult. However, in questionable cases there should be no delay in sending them to the hospital where a flat roentgen-ray plate of the abdomen may be taken and a diagnosis thereby determined. Conservative surgery merits the best results. The essayists report gratifying results. Their percentage of cures is considerably higher than most writers', and I ascribe this to their conservative surgery, painstaking postoperative treatment and follow-up care. The latter is extremely important and not infrequently difficult to have carried out, as the greater percentage of this class of individuals are difficult to educate. The subject of drainage usually provokes discussion. The old version, "When in doubt, drain," is being replaced by a new version, "When in doubt, do not drain." Drainage in these cases is not a life saver and its use should be discouraged. Occasionally an abscess in the pelvis develops and in such cases the necessary drainage can be established.

JOHN HOMER WOOLSEY, M. D. (490 Post Street, San Francisco).—The profession is quite well educated to the recognition of symptoms and signs of a perforated peptic ulcer, but now and then delay in order to make an exact diagnosis jeopardizes the patient's chance of recovery. Many of such patients are too sick and suffering too severe pain to give reliable histories. An acute onset of severe pain and the rigid board-like abdomen are sufficient for a diagnosis of, first, an "acute surgical abdomen," and the more refined diagnosis will follow in 75 per cent of instances. A plain roentgen-ray with the patient in a sitting or standing position, as recommended by the authors, is worth while when in doubt. Do not let us delay when there is evidence of the "acute surgical abdomen." When in doubt give the patient the best chance of recovery, and that is direct inspection by laparotomy.

In this paper we are particularly interested in the types and results of treatment. The class of patients who fall to a free city emergency service are usually a malnourished type. Therefore the general resistance will run low and influence the authors' statistics, especially in those instances where operation was delayed to ten hours postrupture. However, I would heartily endorse what they recommend, single closure preferred; but if this is likely to give obstruction to the progress of the meal, then an accompanying gastrojejunostomy. In the acute perforation, characterized by a simple puncture and no accompanying visceral wall induration, simple closure by approximation and inversion as a rule is sufficient. In perforation of an old ulcer, then, the visceral wall induration closure may lead to too much intrusion upon the lumen, and then a gastrojejunostomy is in order. Any pyloroplasty (and the only one of certain enduring benefit is the Finney type) is as a rule contraindicated, for one should avoid fresh incisions in and through an inflamed area.

In the postoperative care I have never found that water in small sips, starting twelve hours postoperatively and in increasing amounts thereafter, has ever interfered with healing or been accompanied by any more likelihood of stasis. On the contrary, I believe this fluid by mouth has been of added comfort to the patient.

The authors' recommendation of nonperitoneal drainage is, in my opinion, wise, but I believe that, as a rule, drainage of the abdominal wound should be employed.

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THOMAS O. BURGER, M. D. (1301 Medico-Dental Building, San Diego).—Ruptured duodenal ulcer is one of the very dramatic surgical conditions where prompt surgery, with very few exceptions, will save more lives than any other comparable intra-abdominal condition. Most of these cases are seen by the general practitioner first, and at the present time the majority of the profession are alert and members of our organization appreciate the urgency of this need of immediate surgery; but, as we know, there are a great many irregulars, nonmembers of medical organizations, religious, or other type that do not recognize or, if they do recognize, do not give these people the benefit that they deserve in the way of immediate attention. It is proved well in this paper, and in other discussions and statistics, that hours of delay means an increasing number of deaths, and the doctor who has the force and ability to persuade these patients or their family to an immediate operation is the benefactor. Fortunately the majority of these people are in such intense agony that they are easily persuaded to go to a hospital, when on other occasions they may be very difficult subjects to persuade. The doctor who repeats his hypodermic of morphin until he produces sufficient ease to allow these patients to go into this second stage or "phase," as it is described in this paper, often loses that golden opportunity of getting the patient at the opportune time.

Ruptures that are quickly protected by surrounding viscera or omentum and held from spreading are not of the outspoken, bold, clinical type that occurs in the vast majority, and their diagnosis is frequently

very difficult from other intra-abdominal conditions. Occasionally extra-abdominal conditions as coronary occlusion may suggest very strongly a ruptured duodenal ulcer, but considering their infrequent occurrence and delay incident to diagnosis, this in ninety-odd per cent of the cases is hardly a question when board-like rigidity, shock, and agonizing epigastric pain are present.

Immediate exploration, closing the ulcer, unless there is a very decided induration of the visceral wall, by simply closing the ulcer and vulcanizing a patch of omentum thereon is all that is necessary in probably over 90 per cent of the cases, and intra-abdominal drainage is not usually indicated. Recurrence does occur, as perforation occurred the second time in a patient of mine, but that is a rare case.

Gastro-enterostomy or pyloroplasty has its indications, but in the vast majority of cases I think our reports and statistics show that the extra risk of surgery at this particular time, when all conditions are not so favorable, will be more fatal probably than that later fatality resulting by not doing the operation.

These patients should be followed up carefully, and if symptoms and roentgen-ray findings indicate the recurrence of an ulcer, then more radical surgery can be performed at a more opportune time.

I agree with the authors that spinal anesthesia is extremely desirable in this class of cases. The one disadvantage in rupture of some viscus in the lower abdomen on account of the low head position is not objectionable here because our trouble is in the upper abdomen. Cleansing of the peritoneum is much easier, the operation can be done more rapidly for the repair is easier, and in most instances is more desirable from every standpoint. Patients seen in the very late stages of peritonitis are a serious problem. Often, as has been stated so well in this paper, it is a chemical or a mechanical irritation peritonitis rather than of the septic type. By the institution of the customary treatment for peritonitis, *viz.*, Fowler's position, duodenal drainage, fluid balance, etc., until localization takes place, probably is as great a life-saving treatment as we know.

FRACTURES OF THE FOREARM*

A SIMPLE METHOD OF HANDLING BY MEANS
OF WIRE TRACTION

By SAMUEL S. MATHEWS, M. D.
Los Angeles

DISCUSSION by H. W. Spiers, M. D., Los Angeles; Alfred Edward Gallant, M. D., Los Angeles; Douglas D. Toffelmier, M. D., Oakland.

THE purpose of this paper is to present a simple and efficient method of handling difficult fractures of the forearm, meeting the two constant requirements in the treatment of any fracture—good reduction and uninterrupted fixation until bony union takes place. By difficult fractures, I mean compound fractures and those cases which cannot be treated successfully by the ordinary, conservative means of handling fractures of the forearm.

METHOD OF PROCEDURE

The procedure is carried out under a general anesthesia in the operating room, and the same precautions are observed as in any major operation. The lower third of the arm and entire forearm, including the fingers, are prepared in

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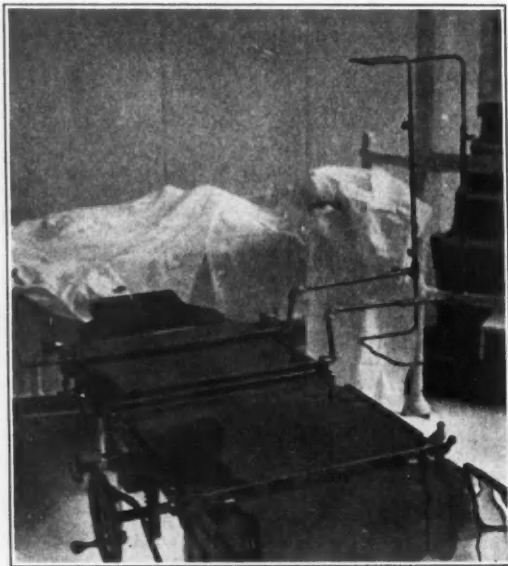


Fig. 1.—Simple frame used for the reduction of forearm fractures. The forearm is suspended between the over- and underhanging cross rods.

the usual manner, with ether, alcohol, and iodine. A small steel wire, 26 gauge piano wire (.01594 inch in diameter), is introduced through both the ulna and radius, without previously incising the skin, one-half inch below the styloid process by means of a specially constructed hand brace. The wire is started on the ulnar side, in view of the fact that the ulnar styloid lies below that of the radius, thus insuring passage of the wire through both bones, and also that it will lie below the ulnar notch of the radius. In a similar manner, wire of the same gauge is inserted through the olecranon. With the wires in place, alcoholic dressings are applied and are held in place by sterile band-

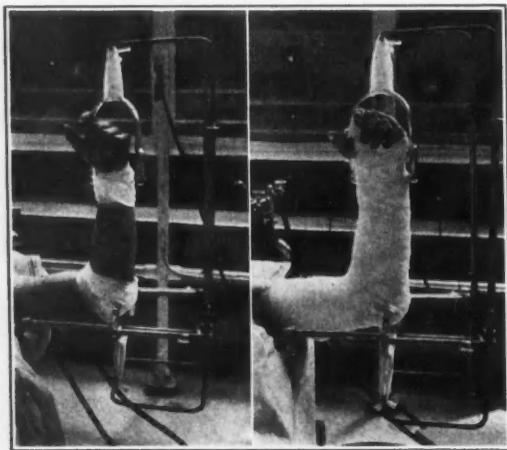


Fig. 2

Fig. 3

Fig. 2.—The forearm fracture, reduced by raising upper cross-bar and resetting set screws, thus exerting pull on upper wire pin.

Fig. 3.—Plaster cast, applied without disturbing position.

age. A U-shaped compressible steel clamp is then applied to both wires for the purpose of keeping them taut. The arm is then brought out to right angle abduction and flexed at the elbow. With the lower clamp tied to a fixed object, overhead traction is then applied.

We have worked out a very convenient frame for the purpose of obtaining this traction. It consists of two pieces of one-fourth inch pipe which are clamped across the table under the patient and extend out on either side of the abducted arm beyond the elbow. Each piece is provided with an upright member. Cross rods, which are bent at right angles, are slipped into both the upper and lower ends of the uprights and are fixed into position by set screws.

The forearm is suspended between the under and overhanging cross rods. By merely raising the upper or lowering the lower cross rods and resetting the set screws, traction can be exerted. By means of a portable x-ray unit or lateral and anteroposterior x-ray pictures, the fragments can be easily manipulated into position. The sterile bandages, holding the alcoholic dressings in place,

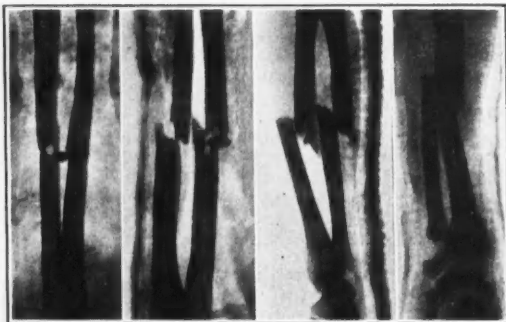


Fig. 4a.—Before reduction. Fig. 4b.—After reduction.

are cut and a plaster cast is then applied from the mid-forearm down to mid-palm without disturbing the position of the arm. The wire pins are incorporated in the plaster, thus preventing the slipping back of the fragments. As soon as the plaster becomes hard the U-clamps are removed and the protruding pieces of wire are cut off about one-fourth inch from the plaster and the ends covered by a few rolls of plaster bandage. Immobilization is continued until there is sufficient amount of bony callus to prevent a possible displacement of the fragments.

When x-rays show that we have enough bony callus to make sure that the fragments will remain in place, the cast is removed. One end of each wire is cut close to the skin edge by means of ordinary wire cutters. The wounds are thoroughly cleaned with alcohol and iodine. The wires are then withdrawn from the opposite side. A new cast is then applied.

DIFFICULTIES IN TREATMENT

Fractures of one or both bones of the forearm above the wrist are affected by all the surrounding

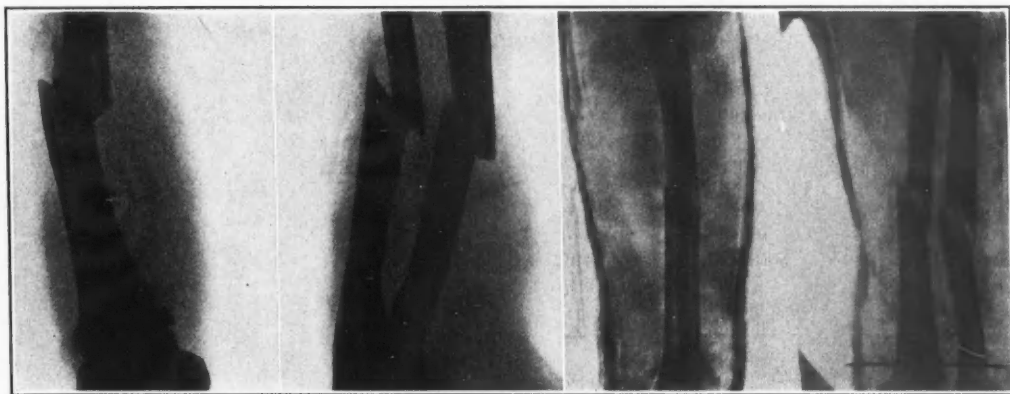


Fig. 5a.—Lateral view before reduction.

Fig. 5b.—Anteroposterior view before reduction.

Fig. 5c.—After reduction.

muscles, as far as longitudinal traction is concerned, but ordinarily it is not the over-riding of the fragments that gives us our difficulty. It is the rotation of the fragments due to the action of the pronators and supinators which makes this type of fracture not only difficult to reduce but also difficult to maintain in reduction by the ordinary means of fixation. We classify such fractures in reference to the insertion of the pronator teres. Fractures below the insertion must occur between the pronator teres and the pronator quadratus, which runs almost transversely across the lower end of both the radius and the ulna. In such fractures, the distal fragments are drawn together, due to the action of the pronator quadratus, assisted by the brachioradialis, which is inserted on the styloid process of the radius and tends to tip the radius toward the ulna. The upper fragments tend to go into position of supination through the action of the biceps, assisted by the supinator brevis, but this is opposed by the pronator teres, which also tends to approximate the upper fragments.

In fractures above the pronator teres, both the pronators are attached to the lower fragment. The pronator quadratus tends to draw the upper end of the lower fragment together, assisted by the brachioradialis. The pronator teres tends to pull the lower fragment into pronation and also pull it toward the ulna. The upper fragment is affected by the biceps and the supinator brevis, whose action is to rotate the upper fragment into supination and flexion, so that the upper fragment is usually anterior to the lower fragment. It is this type of fracture which offers a far more difficult problem, and, as said before, is not only hard to reduce but also hard to hold in reduction by our ordinary methods of handling the forearm.

COMMENTS ON OTHER TREATMENTS

Conservative treatment of these difficult fractures, in this country up to the present time, has varied with the individual operator, and the results have not been particularly encouraging. In most instances, open reduction, with internal fixation, is carried out. In Wilson and Cochran's

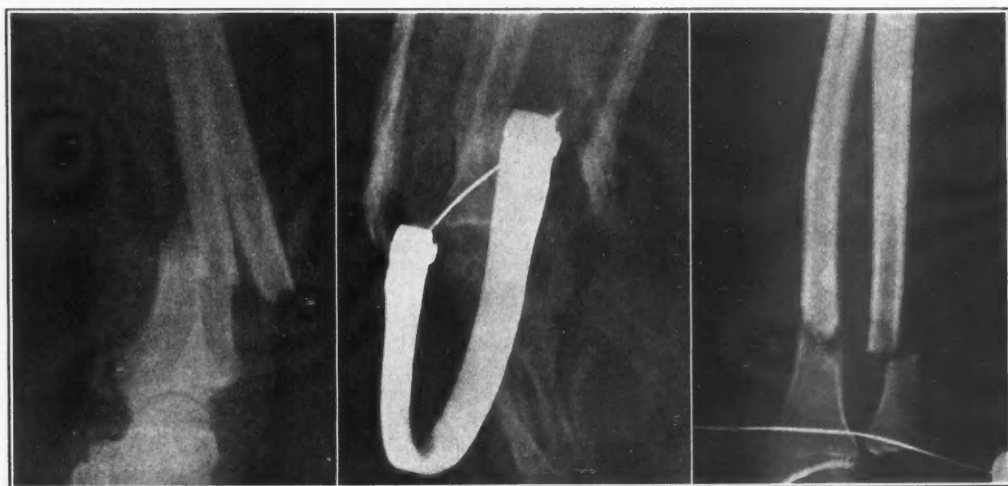


Fig. 6a.—Lateral view before reduction (comp.).

Fig. 6b.—Lateral view after reduction.

Fig. 6c.—Anteroposterior view after reduction.



Fig. 7a.—Anteroposterior and lateral view before reduction.

Fig. 7b.—Lateral view after reduction.

Fig. 7c.—Anteroposterior view after reduction.

book on fractures and dislocation, we find under the heading of fractures of both bones of the forearm with displacement, the following:

"Unfortunately, traction methods, although valuable, cannot be depended upon to the same degree for the correction of deformity, as in fractures elsewhere, and skeletal traction in the region of the wrist is scarcely advisable. For these reasons, and because of slight risk to the patient involved by the operation itself, open reduction is more frequently resorted to than in case of many other fractures. Such procedure is justifiable in the hands of a well-equipped surgeon with meticulous technique and large experience in the operative treatment of fractures, but under other auspices is likely, sooner or later, to result in disaster."

These authors no doubt have reference to the large, rigid pin when they advise against skeletal traction in the region of the wrist.

In the bulletin of the American College of Surgeons, on the principle and outline of fracture, one may read:

"If over-riding cannot be overcome and satisfactory reduction obtained, the patient should be referred to a competent surgeon."

Dr. Willis Campbell states in his book on orthopedic surgery that if manual reduction is impossible, an open reduction is indicated. Suspension of the arm from an overhead frame is, at times, of value in securing the reduction of fractures of both bones, in his opinion.

METHOD PREFERRED

In other words, our treatment for such fractures has been open operation if reduction is impossible to attain. We feel that with the aid of the wire pin used as a means of direct traction on the fragments, in a manner similar to that described by Böhler in his recent book on the treatment of fractures, reduction can be carried out. We are able to overcome the great difficulty in handling these fractures, that is, overcome the existing deformities resulting from muscle pull, all of which can be carried out with the minimum amount of trauma. With the pin passing through the lower fragments, the action of the pronator teres to approximate the lower fragments is over-

come and the normal interosseus space is secured. The over-riding deformity, due to the longitudinal pull of the surrounding muscles, is easily overcome by straight traction. By merely rotating the hand, with the elbow flexed, any rotation deformity and anterior displacement of the upper fragment, due to the action of the biceps, can be easily corrected. With the fragments in place and the cast applied, incorporating the pin, we have the fragments fixed in such a way that there can be absolutely no displacement of fragments due to muscle pull. If we are dealing with a compound fracture, the reduction can be carried out with practically no further injury to the involved area. In treating such fractures, it is advisable to first do a complete debridement of the wound and then insert the pins. If there has been extensive laceration of the soft parts so that the skin edges cannot be approximated and further dressings are indicated, this can be carried out easily by merely cutting a window in the cast and in no way increase the possibility of losing our position. With this method we also overcome the possibility of an existing infection in the wound working its way down the muscle planes, which is apt to happen in treating these cases with overhead traction. During the period of convalescence the patient is extremely comfortable and can be easily followed in the out-patient clinic or any office, thus reducing the period of hospitalization.

In cases thus treated in the orthopedic service of Los Angeles General Hospital, where this work was carried out, at no time have we failed to get satisfactory reduction, and we have been able to maintain that reduction throughout the course of healing. In some instances the patient has been referred home after the third or fourth day following the reduction and treated thereafter in our out-patient clinic.

CONCLUSIONS

The use of the wire-pin traction is the most effective way of handling difficult fractures of the forearm because:

1. It gives us direct traction on the fragments;
2. It permits manipulation with a minimum amount of trauma;
3. It permits dressings in compound fractures without disturbing the fragments; and
4. It prevents malposition after reduction has been obtained.

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DISCUSSION

H. W. SPIERS, M. D. (614 Westlake Professional Building, Los Angeles).—Doctor Mathews has brought to our attention Böhler's ingenious and thoroughly sound method of handling difficult fractures of the forearm. It follows his cardinal principles in the reduction of fractures, *i. e.*, fractures should be reduced by traction and countertraction, the distal fragment should be placed in line with the proximal fragment, and immobilization should be complete until firm union has taken place. The major difficulty in the handling of fractures in this region has been in following out the first fundamental principle. The method presented maintains traction and countertraction readily, it automatically corrects alignment, and immobilizes by incorporating the skeletal traction in plaster.

The development of the piano-wire traction has made this form of skeletal traction in the smaller bones practicable. His spring steel traction collar is one of many developed recently, to produce the lateral tension necessary on the piano wire. It is efficient. I have used it with great satisfaction.

It is my opinion that those who will study and acquaint themselves with skeletal traction in the handling of the difficult fractures of the forearm will find a distinct and positive advantage in its use.

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ALFRED EDWARD GALLANT, M. D. (727 West Seventh Street, Los Angeles).—Doctor Mathews' paper is interesting from several standpoints because it offers a method of handling difficult fractures such as one encounters in the supracondylar region, either the comminuted or compound type in fractures of the acetabulum, where the head has been driven into the acetabulum, or such fractures where there is a distortion of part of the pelvic ring.

We have had a few cases of fractures of the ulna and radius which offered difficult reductions and were successfully treated by the application of piano-wire traction. We have had two fractures of the lower end of the humerus, one of which was compounded, and portions of the bone were lost at the time of the compounding. Such a fracture would offer a very difficult problem, from a conservative viewpoint, and it would be practically an impossibility to treat it without skeletal traction. However, with piano wire through the ulna, below the olecranon, and the incorporation of mechanical traction in a plaster spica, the result has been very gratifying, function having been returned to the elbow, although the original elbow joint had been badly damaged. The second case, a comminuted fracture of the humerus with considerable distortion of the fragments, in a woman about fifty-five years of age, was successfully and efficiently treated in the same manner, by piano-wire traction. We have found it very satisfactory to use piano wire with mechanical traction in fractures of the acetabulum, the mechanical traction being incorporated in the plaster spica, the piano wire and the spring loop being attached to the greater trochanter. The possibility of osteomyelitis with this method is greatly minimized as compared to the use of the Steinman nail, where there has been any extensive laceration and congestion of tissues which might lead to this unfortunate complication.

I quite agree with Doctor Mathews and his reference to Dr. Willis Campbell's remark that when conservative methods fail, skeletal traction of this type is of great value.

DOUGLAS D. TOFFELMIER, M. D. (367 Hawthorne Avenue, Oakland).—The treatment of forearm fractures with wires or heavier steel pins as a means of traction and fixation did not originate, unfortunately, in America. It has been used for several years in Europe by such men as Beck of Kiel, Böhler of Vienna, and Kirchner of Tübingen. The evolution of Böhler's method, as described in his present book, consisted of the following steps: First, manual traction of the forearm with countertraction above the elbow, flexed to 90 degrees, and the application of a nonpadded cast well moulded about the wrist and elbow to prevent shortening or rotation of the fragments. Second, the same type of traction for reduction with the insertion of a round wooden peg in the plaster on the volar and dorsal aspects of the forearm, which were pressed into the interosseous space to prevent the narrowing mentioned in this paper. This method was a great improvement over previous methods, but still did not answer in certain difficult fractures. Lastly, a manual reduction, and, while the traction was maintained, an insertion of two Beck wires (2 millimeters thick), and the application of the cast as described by Doctor Mathews. I use this last method of Böhler's frequently, and find it simple and very efficient. It differs from the method of Doctor Mathews only in that the reduction is made first, and the wires are inserted secondarily to act as two fixed points in the maintenance of the position of the bones. When Doctor Mathews is dealing with a forearm fracture in which the proximal or distal fragments have rotated on their longitudinal axes, the insertion of his wires before that deformity is corrected will prevent these fragments from returning to their original position. If Böhler's method of manual traction is followed closely, with the hand halfway between supination and pronation, and the elbow at a 90-degree angle, all the muscles involved will be on equal tension, and the fragments will almost always correct themselves sufficiently to insure an excellent functional result. If still more traction is necessary to overcome the shortening, the wires can be inserted and more traction can be applied by the use of Doctor Mathews' compressible U clamps only after the major deformities have been reduced.

I quite agree with Doctor Mathews that those methods of treating forearm fractures, described in American textbooks, are very frequently inadequate. I do not believe, however, that the major problem has been in the reduction, but rather in the maintenance of the reduction. Further I believe that the wires should not be inserted until the major deformities have been reduced. Wires inserted first and then used as a means of traction may become an obstacle in the reduction of the rotation and interosseous narrowing deformities.

CORNEAL ULCER—ITS TREATMENT*

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Los Angeles

DISCUSSION by William A. Boyce, M. D., Los Angeles; M. F. Weymann, M. D., Los Angeles; Roderic O'Connor, M. D., Oakland.

A CONDITION which may cause a greater or lesser impairment of vision, unsightly scars upon a very conspicuous and expressive organ of the body and even entire destruction of that organ, is one which calls for the most expedient therapeutic measures at our command.

ETIOLOGIC FACTORS

Corneal ulcers in general are the result of the invasion of bacterial organisms into a vulnerable area in the cornea. Such an area may result from

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an abrasion, a foreign body embedded in the cornea, a penetrating injury, or chemical burns. It may arise from the necrosis of phlyctenules or deeper infiltrates, the breaking down of a dense scar under the influence of toxins and remote from adequate nutrition, such as the atheromatous ulcer in the infiltrated margins of pannus, and in cases of severe purulent conjunctivitis such as gonorrheal ophthalmia where corneal necrosis sometimes occurs.

Without taking up the special characteristics of each kind of corneal ulcer, we have in all cases a break in the continuity of the corneal epithelium with necrosis where the toxins of invading bacteria have destroyed native cells and their defenders, the leukocytes. Just beyond this, wandering cells fill the lymph spaces in all available channels, while new lines of communication in the form of loops of superficial vessels come in from the limbus and penetrate to the base of the ulcer.

OBJECT OF TREATMENT MEASURES

The first consideration in treatment is to survey the area involved and the frontier of advance by the instillation of a two per cent aqueous solution of fluorescein, which stains the denuded area and the necrotic margin of the ulcer. A few minutes should be allowed for penetration of the fluorescein into the border of the ulcer where the bright ring of staining indicates the limit of necrosis. If one has a slit lamp available, much can be learned regarding the depth of the ulcer by means of direct focal illumination with the narrow beam, giving an optical section of the cornea. The advancing border, as well, can be more efficiently studied by this means, and this is particularly true of the dendritic ulcer, where fine filaments of invasion can be picked up with the slit lamp. However, this refinement of technique need not challenge one's powers of observation with the magnification afforded by a simple hand lens.

Approaching next a plan of treatment, the selection of a local antiseptic to produce as complete asepsis as possible is necessary. One of the most commonly used is the mild silver protein. As a germicide its efficacy may be questioned, but it is of value in producing asepsis by virtue of its property of precipitation of mucus in the conjunctival sac. The coagulum thus formed may then be washed out, leaving a clean mucous membrane for the action of other antiseptics. While its frequent, prolonged use must be guarded against on account of the argyrosis that results, it can be used to good advantage when it is necessary to clear the conjunctival sac of detritus.

Optochin, or ethyl hydrocuprein has proved to be of specific value in *ulcus serpens* and should be used frequently in one per cent solution in these cases.

Zinc sulphate in one-fourth to one-half of one per cent solution is of value where a mild stimulating effect is desired.

A great variety of other antiseptics may be mentioned, such as metaphen in 1 to 5000 dilution; 1 per cent aqueous solution of mercurochrome;

mercury oxycyanid, 1 to 5000; and hexylresorcinol, 1 to 2500; all of which are effective and convenient to use by instillation or as a wash.

The ulcerated area requires direct treatment, which may be accomplished by several means. Chemicals are used, and to this end iodine may be employed in early cases by making a syrupy solution of equal parts of tincture of iodine and glycerin, and adding ten drops of this to ten grains of iodine crystals. This may be applied with an applicator made of cotton wrapped tightly upon the end of a toothpick and the end cut off bluntly with scissors. The solution is applied to the floor of the ulcer and well into the necrotic edge. In a similar way, trichloroacetic acid may be employed by using the crystals in a deliquescent state with the same type of applicator, or with the blunt end of a toothpick. Trichloroacetic acid is very effective and can be accurately applied, as the tissue contacted immediately turns white as the acid becomes fixed, and there is not the tendency to creep on further into the tissues. It can be applied with safety to ulcers of any size or depth.

Heat Cauterization.—Cauterization by means of heat may be accomplished in a very simple way with an implement of suitable-sized tip, such as a probe or strabismus hook, touching the infiltrated margin of the ulcer with the tip, which has been heated to cherry red with flame. The same may be done with the galvanocautery. Such methods of heat cautery are not controlled and uniformity of temperature is not obtained. A better means has been devised for the application of heat which can be regulated to within one degree of the temperature desired. This is obtained with the Shahan thermophore, which insures uniformity of application by virtue of a set of applicators of varying size and shape, as well as uniformity of temperature controlled by a thumb-screw thermostat. The instrument is used by selecting an applicator of sufficient size to overlap the necrotic margin of the ulcer, adjusting the thermostat to secure the desired temperature, and then applying directly against the lesion with sufficient pressure to dent the cornea. A temperature of 150 to 160 degrees is selected for progressive infected ulcers, such as *ulcus serpens*, and applied for one minute. For dendritic and other indolent ulcers, a temperature of 135 to 140 degrees for one minute will usually suffice. In treating marginal ulcers arising as the result of the breakdown of deep-seated infiltrations, the author has found the use of the thermophore at 145 degrees for one minute particularly efficacious. A second application may be required in some instances.

Ionization.—In the experience of some men, such conditions as *ulcus serpens*, dendritic ulcers, and herpetic ulcers have responded well to treatment by iontophoresis. This treatment is accomplished by the ionization of a salt such as zinc sulphate in one-half of one per cent solution, the anode being applied to the eye and the cathode to the cheek, and a galvanic current of two milliamperes used. This method has the advantage of leaving less scar.

Ultra-Violet Light.—For a number of years ophthalmologists, and particularly Duke-Elder, have used ultra-violet light in the treatment of corneal ulcer. Administration by the mercury vapor arc or the carbon arc lamps result in rapid healing, leaving a thin scar. The method requires special apparatus, but has much in its favor in the resultant thinner scar formation; and no other treatment of the ulcerated area is required.

Protein Therapy.—A widely applicable, and very efficacious means available to all, is the use of nonspecific protein therapy. Boiled milk or lactigen may be used intramuscularly in quantities of eight to ten cubic centimeters for the average adult, repeated several times if necessary. Typhoid vaccine, 25,000,000 organisms, may be given intramuscularly or intravenously in accordance with the Howard method. Mixed respiratory vaccine, commencing with four minims, may be given subcutaneously or intramuscularly, doubling the dose in three days, and redoubling in another three days. Nonspecific protein therapy should always be given at once in cases of *ulcus serpens* and gonorrheal ulcer. The author prefers lactigen intramuscularly or typhoid vaccine intravenously, as the dose can be more accurately measured than milk. Milk is an uncertain quantity, as its efficacy varies directly as the bacterial count.

Surgical Procedures.—A number of surgical procedures are valuable adjuncts to the treatment of corneal ulcer. The simplest instrumentation is the removal of the necrotic base and margin of any penetrating ulcer by curettage. This will frequently hasten the repair of an indolent ulcer which is slow in healing. If an ulceration has penetrated deep into the stroma until finally Descemet's membrane can be seen as a glistening point, one should not hesitate to perform a paracentesis. The release of tension will often prevent perforation of the cornea, and its extremely unpleasant sequelae, incarceration of the iris. Paracentesis should also be done very early if hypopyon exists, the exchange of fluids in either case being beneficial.

Where large areas are involved, flaps of conjunctiva should be prepared and placed over the area. The author prefers a complete purse-string flap, as it affords the most complete protection and nourishment for the cornea. Sanford Gifford advises this procedure even in the presence of a purulent discharge, when the cornea becomes involved in gonorrheal ophthalmia.

Other Measures.—A few words about adjuvant measures. Atropin is indicated in secondary iritis, as well as for the relief of ciliary spasm, and always where perforation is imminent. For the comfort of the patient, ointments are of value in preventing irritation and erosion of the ulcer margins. All procedures requiring much manipulation and all applications to the cornea must be preceded by thorough cocaineization with four per cent cocaine. The possibility of an infected tear sac must not be overlooked. In recurrent ulcers remote foci of infection should be searched and close attention paid to constitutional treatment.

SUMMARY

All corneal ulcers should be carefully studied as to area depth and progress by staining with fluorescein and observing under magnification. The slit lamp is a valuable aid.

Antiseptics are more effective if conjunctival sac is first cleansed by mild silver protein which forms a coagulum of the detritus which can then be evacuated by irrigation.

Cauterization of ulcers by means of trichloroacetic acid is perhaps the most generally applicable of the chemical agents and leaves a relatively thin scar.

The Shahan thermophore is the most accurate means of applying heat of a known temperature for cauterization of ulcers, and is particularly valuable in *ulcus serpens*, dendritic ulcer, and certain indolent ulcers.

Phototherapy offers some distinct advantages in requiring less manipulation and causing less pain and less scarring.

Nonspecific protein therapy is a distinctly beneficial adjuvant to treatment, and should always be given in cases of *ulcus serpens* and gonorrheal ulcer. Milk is less constant in its action than typhoid vaccine, lactigen, or mixed respiratory vaccine.

Certain surgical measures are of value, such as paracentesis, when perforation is imminent, and use of the sliding conjunctival flap when large areas are involved, as well as for impending perforation.

Foci of infection must be eliminated and constitutional causes must be sought and treated in cases of recurrent ulcer.

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DISCUSSION

WILLIAM A. BOYCE, M. D. (727 West Seventh Street, Los Angeles).—I realize the difficulty in attempting to discuss the broad subject of corneal ulcers in one paper in a given time as allowed by this section. Doctor Whalman is to be complimented on the thoroughness with which he has covered the ground in the time allotted to him.

The subject of corneal ulcers should be divided into prevention, cause, and treatment.

Gifford thinks that 80 per cent of corneal ulcers can be prevented by attention to two things: removal of foreign bodies, and cure of chronic infections of the lacrimal sac. Certainly a great many ulcerations of the cornea from a gonorrhea ophthalmia can be prevented by the early use of foreign proteins and keeping the pus out of the saucer as formed by the edematous conjunctiva.

It is necessary to find the cause of a corneal ulcer before it can be intelligently treated, and the cause, if possible, must be removed. As an illustration, a dendritic ulcer is due to an involvement of the cornea with the virus of herpes simplex, and on account of the anesthesia of the cornea and the accompanying disturbances of nutrition the eye should be kept constantly closed. Protein injections in these cases should be avoided, as the use of typhoid vaccine has been known to cause the condition. Many ulcers require no treatment other than the removal of the focus of infection; for instance, a phlyctenular keratitis which is generally considered to be tuberculous. Other forms of tuberculous keratitis at times break down and ulcerate. It is obvious that constitutional treatment must be applied before results can be expected.

I do not believe that Doctor Whalman intends to convey to you that opening the anterior chamber is

harmless. In my opinion, this is a bad procedure except in extreme cases; I do not believe it accomplishes much, if any, good. It is a well-known fact that an anterior chamber emptied by a paracentesis refills in a very few minutes; that a hypopyon contains no microorganisms and is what is considered laudable pus; and that the pus does not come from the ulcer, but is secreted by the ciliary body and indicates that there has been an iridocyclitis as the result of the ulcer.

I believe that in the majority of cases better results are secured by allowing a deep and bulging ulcer to rupture of its own accord; or, if it is thought best to rupture it, to do so with a cautery puncture. This wound will stay open for several days, lowering the tension in the anterior chamber.

Foreign proteins have a place in the treatment of sluggish ulcers, but too much dependence must not be placed upon them and they must be intelligently used and with caution.

Treatment. After due consideration of the cause, and that factor eliminated if possible, we are to consider the local treatment. The so-called antiseptics dropped into the conjunctival sac are of questionable value and too much reliance cannot be placed upon them.

Atropin should be used in every case.

After thoroughly anesthetizing the eye with some anesthetic other than cocaine, the slough should be thoroughly removed and a thorough application of the cauterizing agent of choice—whether it be tincture of iodine, carbolic acid, or trichloroacetic acid—should be made wherever there is any stain. Then ten grains of aspirin should be given to control the after-pain, an ointment of some kind instilled, and the eye closed and kept closed. Ice applications should be used in preference to heat. This should be repeated every day or every second day. If after a reasonable time no progress is made and the ulcer cannot be controlled, then it is time to consider foreign proteins and the thermophore. Theoretically it looks simple to give a foreign protein or use the thermophore, but in private practice practically all ulcer cases are office cases, seldom hospitalized. Both procedures can be practiced in the office, but not so conveniently; private patients do not like either. I am very much in favor of both when necessary.

Optochin dropped in the conjunctival sac is painful and its value doubtful unless it is applied direct to the ulcer. The actual cautery is seldom used. At present the thermophore is preferable.

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M. F. WEYMANN, M. D. (2007 Wilshire Boulevard, Los Angeles).—Biomicroscopy is of inestimable value in determining the seriousness of the corneal lesion. Epithelial edema, swelling of the stroma, folds in Descemet's membrane, and precipitates on the posterior surface of the cornea indicate, in order, increasing severity of involvement. It is true that the exudate of hypopyon is from the ciliary body and sterile, but biomicroscopy reveals that in these cases the albumen content of the aqueous has become so high as to cause a cessation of the normal circulation of the aqueous by convection. Thus it seems reasonable to suppose that paracentesis would be beneficial, for the cause of the stasis is removed and the corneal endothelium is permitted to be again bathed in a circulating fluid.

In the treatment of corneal ulcer, let us also not forget to treat the patient. He must first of all be relieved of his pain so that nature may be undisturbed in building up his resistance. When local measures fail to do this, the administration of the coal-tar analgesics at regular intervals will accomplish wonders. Too often these patients are allowed to carry on their regular work with the protection of only a pair of tinted lenses when they should be impressed with the fact that the eye is part of the body that is ailing, and that complete rest or lessened activity is necessary to obtain as rapid a cure as is possible.

Elimination of foci of infection is desirable from the standpoint of building up the patient's resistance, whether the ulcer is specifically due to absorption from

a focus or not. It has usually proved desirable, in my experience, to initiate the treatment of these patients with a thorough cleansing of the intestinal tract by means of calomel, followed with the usual saline cathartic on the ensuing day. The patient will also be grateful for specific advice as to a sensible diet, abstinence from alcohol, and general hygienic measures.

Too frequently the local treatment of corneal ulcers is overdone. Excessive chemical disinfection or cauterization, particularly of noninfected ulcers, will slow the healing process and increase the period of disability. Before an ulcer can be expected to heal, we must eliminate possible local irritation in the conjunctiva which may be the source of the corneal disturbance. Not infrequently calcified or caseous particles in the conjunctival crypts or Meibomian glands of the upper lid prevent a corneal ulcer from healing. Treatment of an inflamed conjunctiva may be the means of curing an ulcer without direct applications to the cornea.

In the trophic and uninfected ulcers of the cornea, an occlusion dressing with atropin and novoform ointment may be all the local therapy required. I wish particularly to emphasize the necessity for early occlusion of a cornea afflicted with herpes, as a severe ulcer may be avoided by this treatment.

My views as to the administration of foreign protein in infected ulcers are thoroughly in accord with those of Doctor Whalman. The use of the thermophore of Shahan has been described, and when other measures fail, its application practically always effects a cure when intelligently managed.

You will pardon my presumption in calling attention to the simpler and more elementary measures in the treatment of corneal ulcer, but I fear that we frequently become so absorbed in local and intricate forms of therapy that the basic principles of treating the patient are overlooked. We should be grateful to Doctor Whalman for the practical manner in which he has presented the treatment of a condition which so commonly confronts and baffles us.

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RODERIC O'CONNOR, M. D. (1904 Franklin Street, Oakland).—Inasmuch as I am the third discussant, but little is left except to give my ideas on certain points mentioned by the other two and by the author. I am a firm believer in the actual cautery (Prince) early in all infected ulcers, and am frequently sorry when, for any reason, its use is delayed. Also I feel that the sooner a worthwhile procedure is used the better. In this connection, I have recently had a corneal ulcer that refused to heal under ordinary treatment. It healed in four days after a 100,000,000 dose of antityphoid vaccine. I feel certain that something more than coincidence entered into the cure and that its use was unduly delayed.

As to ulcers threatening to rupture: I think a tiny cautery puncture preferable to spontaneous rupture. It can be made so small that the desired leakage is secured and yet without loss of the anterior chamber.

As to hypopyon: If one is left too long it may organize and form a permanent opacity. It should be removed by puncture and drainage in time to prevent such an occurrence.

I can see no objection to giving an antityphoid vaccine in the office, nor in the use of the cautery or its substitute, the thermophore.

I do not believe that the opinions of a patient as to what he likes or dislikes should enter into the treatment, as mentioned by Doctor Boyce. A patient has no right to direct the treatment and expect the medical attendant to assume the responsibility. So when patients refuse to permit me to do what I feel is necessary, I ask them to kiss me good-bye—figuratively speaking of course.

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DOCTOR WHALMAN, (Closing).—Certain points in the discussion indicate a difference of opinion regarding some procedures. Doctor Boyce's advice against the use of cocaine as an anesthetic is well taken, as cocaine has a drying effect upon the corneal epithelium which may reduce its resistance, and another anesthetic such

as five per cent butyn may be well substituted. I use vaccines and the thermophore in my office without serious complaint at the time, and generally am rewarded by praise when results are quickly obtained. I use the vaccines almost invariably, choosing the mixed respiratory vaccine to be given subcutaneously or intramuscularly. I reserve the typhoid vaccine for intravenous use and, of course, the reaction is so pronounced when given by this route that it should not be done in one's office, but at the hospital or patient's home. I agree with Doctor O'Connor—use efficacious measures early.

SYPHILITIC PNEUMONIA*

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AND

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SYPHILIS of the lung, according to present standards, is commonly regarded as a tertiary manifestation of the disease, associated with its later stages. The term in itself seems to suggest gummata, chronic interstitial pneumonias, and eventual fibroses. That an acute and early syphilis of the lung does exist and may prove relatively common, has but rarely been considered in the somewhat turbulent literature of the subject.

HISTORICAL

The first description of syphilis of the lung has been variously ascribed to Paracelsus, Paré, Laennec, Morgagni, Coesalpinus, Pinctor, and to many lesser luminaries. The earliest anatomical description is commonly accepted as that of de Paul¹ in 1850, discussing syphilitic pneumonia of the new-born. Porter²² was the first American to write upon the subject.

During the sixteenth, seventeenth, and eighteenth centuries the diagnosis of "phthisis a lué vénerea" seems to have been fairly common until the discovery of the tubercle bacillus by Robert Koch. In its stead arose a great wave of skepticism. There was a general house-cleaning of museums; material taken from syphilitic patients was subjected to careful reconsideration; and specimens found under the label of pulmonary syphilis were again scrutinized. The literature that followed this renaissance did indeed seem to indicate a decided dearth of accepted and indisputable cases. The criteria, of course, were those commonly prevalent at that time.

Claytor,⁴ for example, found no cases in 13,000 autopsies. In 1895, there were but ten accepted and labeled cases in all the collections in London.³ Babcock³ found but two in 6,000 autopsies in Chicago. Kolisko³ observed but 100 in many thousands of autopsies in Vienna. Carlier² up to 1882 was able to collect but twenty cases in all, and Hiller¹⁰ could add but eight more in the succeeding two years. Downing⁷ found

none in 3,000 autopsies at the Massachusetts General Hospital. Dorsey found none in several hundred postmortems;³ Symmers²⁸ found two in 314 syphilitics; Stanley²⁶ found two in 1,000 cases; and Massia³ but two in 6,000.

In contrast with this seeming rarity of the disease, however, stand the reports of Chiari,³ who found one case in only 98 autopsies; Osler,²⁰ who found 12 in 280; and Peterson,²¹ who discovered 11 in 88. In their opinions, the disease was, to say the least, relatively common. Other writers were even more venturesome in the face of such great doubt. Satterthwaite²⁵ states "the importance of syphilitic lung affections has been greatly underestimated by the physicians." Rossle, Flockeman,^{3, 4} Porter,²² and others, also went on record as affirming that such might be the case.

It should not seem at all unreasonable to suppose that syphilis can and does attack the lung at least as frequently as it attacks any other tissue of the body; for example, the cardiovascular or the central nervous systems. An explanation of the seemingly wide discrepancies in the figures surely must be sought. Carrera³ attributes this aberration to the multiformity of the lesions produced by syphilis, to the variation in personal criteria for making diagnosis, and to the failure to recognize the basic lesion of the disease. Whereas previously the gumma had been accepted as the fundamental process of late syphilis, it remained for the extravagantly elaborate and painstaking studies of Warthin³⁰ to demonstrate that the gumma is *not* the fundamental lesion, but that a mild inflammatory reaction characterized by the infiltration of lymphocytes and plasma cells was so frequently associated with the finding of the *Spirocheta pallida* in tissue that its specificity might well be recognized. Such mild inflammatory changes may eventually lead on to fibrosis and atrophy in which process the gumma may play an intermediate rôle. Thus by careful and exhaustive search it was found that the *Spirocheta pallida* may be shown to be present in many hitherto unsuspected lesions, and that the tissue elaborated by its presence may be recognized microscopically without the necessity of finding the spirillum.

Diagnosis of the lesions of late syphilis, therefore, becomes a function of the microscope, and not of the naked eye alone. And this seems particularly applicable to syphilis of the lung. Carrera, employing these newer criteria, was able to make positive diagnosis of syphilis of the lung in twelve out of 152 specimens taken from syphilitic patients in the laboratories of the University of Michigan. He further surmises that this number could doubtless be greatly augmented had he but time to prepare and examine serially whole lungs, rather than the common and less time-consuming practice of making diagnosis from sections taken at random from the organ.

From the foregoing, many facts may be gleaned. To the most skeptical, who deny its existence, it should constitute adequate evidence that syphilis of the lung does occur. To those who class it as an exceedingly rare disease, it may be shown that

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multiformity of lesions, variation in personal criteria, and failure to recognize the characteristic pathology of late syphilis, have so depressed its diagnosis as to place it falsely in that category. Authors who fail to employ this newer knowledge similarly tend to underestimate the incidence of the lesion.

Carrera, in his conclusion, feels that it seems most probable that the lungs are involved in the mild general infection of syphilis to about the same degree that the other tissues and organs are. This, of course, leaves much room for enlargement and consideration.

CLASSIFICATION

There are many classifications of pulmonary syphilis extant, and they possess many similar and many differing points. Gumma and fibrosis seem to be common to them all. Fibrosis, however, is apparently given a multiplicity of names. The commonest of these is simple "fibrosis," also called "fibroid induration" by Claytor⁴; "dense fibrosis" by Hoxie¹³; "sclerosis" by the Karschners,¹⁴ by Howard,¹² Rukstinat,²⁴ and Greer.⁸ Stanley²⁰ terms it "diffuse" or "dense sclerosis," and Neuman¹⁶ "diffuse lobar infiltration."

Bronchiectasis, suppurations, ulcerations, and gangrene are found in the classifications of Greer and of the Karschners. Syphilitic phthisis is included by Howard and by Rukstinat. Cavitation is described by Krohn.¹⁷ Tylecote²⁹ adds a pulmonary arteriosclerosis, and a form which is primarily vascular. Carrera, in his more complete description, has shown that in addition to the gummatous and fibrous types there is a vascular type, and that arteritis is an important process in lung syphilis.

Each classification includes its pneumonia, but most authors fail to enlarge on whether their conception of the pneumonia is an acute or chronic process, and whether its scope is bronchial or lobar. From the context of their writings, however, it would seem that they consider the pneumonia as chronic, and usually of the interstitial type. A few writers, however, do mention an acute syphilitic pneumonia.

TIME RELATION OF PRIMARY INFECTION TO PULMONARY SYMPTOMS

The time lapse between the primary infection and the onset of pulmonary symptoms seems to have an important bearing on the nature and the symptom complex of the disease. In deference to the accepted opinion that pulmonary involvement is a late manifestation, we find most authors note a generous time lapse to intervene. The majority of reported cases occur more than five years after the initial infection, and certainly over three. Claytor⁴ states the onset of pulmonary symptoms to be from one to twenty years after primary infection, and the most common being from five to ten years. In Rukstinat's experience,²⁴ as well as in Munro's,¹⁸ the shortest period was three and one-half years.

A search for cases characterized by recent infection, thus more definitely placing the patient in the group of early syphilis, revealed but a few:

Henske,⁹ three months.

Hauffman,¹⁴ three months.

Zinn,¹⁴ four months.

Stanley,²⁰ five weeks.

Ornstein,¹⁹ four months after secondary eruption.

Dieulafoy,¹⁴ ten months.

Downing,⁷ twelve months.

In this group of cases, wherein the time lapse between chancre and appearance of pulmonary manifestations is of sufficient recency to be regarded as early syphilis, there does seem to be a different succession of events and symptoms differing from those exhibited by the usual type of lung syphilis as reported. There is more tendency for acuteness and more rapid evolution of pathology, such as might be anticipated in an early and acute infection.

THE RESPIRATORY TRACT IN SECONDARY SYPHILIS

Pulmonary manifestations that occur during secondary syphilis are but lightly regarded in the literature, as they are similarly lightly dismissed by the clinician. There are those who deny that such pulmonary phenomena are at all related to the syphilis. Fournier,¹⁴ for example, believes that the dyspnea is purely nervous in origin. The predominating evidence, however, supports the contention that the pulmonary symptoms depend upon the secondary syphilis for their existence.

Early pulmonary pathology in association with secondary syphilis was first described by Dann under the title "Pulmonary Syphilis Precoc." Reports from Rothschild, Schnitzler, Schirren, Gwyn, Chamtesse, and others, followed. Aside from a few roentgen-ray studies, however, but little is offered as indisputable confirmatory evidence.

The bronchitis of secondary syphilis was first described by Schnitzler¹⁴ in 1880. Lancereux¹⁴ advanced the hypothesis that the symptoms of the respiratory tract which occurred during the secondary stage of syphilis were dependent upon an exanthem of the mucous membranes, identical with that manifested by the skin. The Karschners¹⁴ also feel that early pulmonary symptoms have as their basis the same exanthem, the result being a mild bronchitis and a secondary dyspnea. Wile and Marshall³² express themselves similarly.

Stanley²⁰ states that the lesions of syphilis which affect the lungs and pleurae are numerous, and that they may be in the secondary or tertiary stages. The lesions due to secondary syphilis, however, are not of much clinical importance. This author is quoted merely because he typifies the current opinion.

SYPHILITIC PNEUMONIA

The next point, then, is that of whether, by direct attack or by virtue of toxins elaborated, the *Spirocheta pallida* is capable of producing a true pneumonia, and where, in classification of syphilis, would such a pneumonia be placed.

That pneumonia does occur in syphilitics cannot be disputed. Whether a portion of such pneumonias are dependent upon the *Spirocheta pallida*, however, remains to be established, and we find those who confirm and those who deny the con-

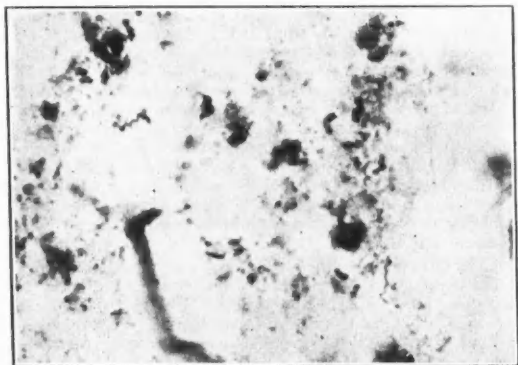


Fig. 1.—Section of sputum block from patient R. C., Levaditi stain, showing *Spirochæta pallida*.

tention. Wile and Marshall,³² in their review of the literature, list the names of Councilman, Gambieni, Birch-Hirschfeld, Orth, Kaufman, Adami, and others, as being of opinion that pneumonia in syphilitics is not primarily luetic, but due to a secondary invader in the syphilis-weakened lung. On the other hand, they cite Neumann, Fowler and Godlee, Fournier, Dieulafoy, and Aufrecht among those who believe that a truly specific syphilitic pneumonia can and does occur. To the latter group may be added the Karshners.

Quoting from the Karshners¹⁴: "While the existence of syphilitic pneumonia is denied by some and affirmed by others, we believe that it occurs more frequently than is recognized." From Wile and Marshall³² is taken the following: "We are inclined to subscribe to the view that resolving or activating changes in the lung, due to syphilis, may simulate very closely the picture of bronchopneumonia."

Rizer²³ and Douglas⁶ both subscribe to the fact that an acute syphilis of the lung does exist, but feel that it is rare. Douglas further notes that the acute form may simulate and be indistinguishable from bronchiectasis, and from bronchopneumonia. Stokes³⁰ holds that syphilitic bronchopneumonia is a rarity.

Many roentgen studies of patients have been offered in the literature, but no true radiographic entity is yet accepted. Watkins,³⁴ for example, describes syphilitic bronchopneumonia as an irregular patchy affair, more irregular in outline than ordinary pneumonia, with more confluence, more mossiness of the edges, and more localization in the bases. In his opinion it may be confused with abscess, bronchiectasis, and with lobar pneumonia.

COMMENT

In the opinion of the authors, then, it seems quite probable that early syphilis can and does involve the respiratory tract quite frequently, and perhaps more frequently than is suspected. The evidence in favor of mucous membrane exanthemata as the cause of respiratory symptoms in secondary syphilis cannot well be denied. Positive proof, in fact, may be obtained from the report of Ornstein,¹⁹ whose patient exhibited secondary syphilis and severe paroxysmal attacks of dyspnea.

Mucous membrane patches were present in the pharynx, and by bronchoscopy identical patches could be followed down the trachea as far as could be seen. Further proof was adduced by the remarkable disappearance of attacks upon institution of vigorous antisyphilitic therapy, followed by reappearance when the patient allowed treatment to lapse, and a second remission when treatment was again instituted.

Granted that the mucosa of the trachea is subject to attack in the secondary exanthem, it also seems reasonable to suppose that this process by extension, or by direct invasion can involve the capillary bronchioles, or the alveoli of the lungs themselves. A process which in the pharynx can produce painfully sore throats, or which in the bronchi can evoke severe bronchitis, should likewise produce enough reaction to stimulate a definite tissue response when it involves the membranes of the lungs. The clinical picture produced by this response would be subject to much variation, dependent upon its intensity, localization, extent, and those mechanical peculiarities which might eventuate from an acute process occurring within the narrow confines of bronchioles or alveoli.

A mild, generalized mucosal involvement, for example, might produce such relatively mild pulmonary symptoms as to be lightly dismissed. Involvement of the bronchioles could produce a picture varying from mild bronchitis to that severe type of capillary bronchitis so closely allied to bronchopneumonia. A widespread and intense mucosal eruption might well produce a severe pneumonia, either broncho or lobar, dependent on its distribution. In fact, such a pneumonia might be so clearly of the usual bacterial types of infection that positive serology, and even frank syphilids, may be entirely disregarded in making the diagnosis and in treatment. Several instances which may fit into this category are found in the literature, most notably, the case of Henske.

Involvement of the respiratory mucosal surfaces being once established, the subsequent course depends on the natural tendencies of the disease plus, of course, the modifying factor of an active lesion within microscopically sized sacs, the lung alveoli. The predominating tendency, as in any mucocutaneous syphilid, is for spontaneous involution, even in the absence of treatment. In a certain proportion of the cases the natural tendency is for persistence, and with it, continuation of the pulmonary symptoms. The mechanical confinement of an acute process within the tiny alveoli may also favor continuation of the activity into a seemingly chronic or atypical pneumonia, and may also explain the mechanics of why caseation, fibrosis, and even cavitation may follow in the wake of an apparently acute pneumonia.

In the patients whose lungs fail to resolve promptly the predominant symptoms would naturally be the most apparent ones, such as the bronchitis; or, as in the case of Ornstein, the asthma; or, as in the case of Henske, the pneumonia. These may be so typical of commonplace, bacterial pulmonary infections that even the presence of

genital lesions, of a secondary cutaneous exanthem, or of strongly positive serology does not cast the shadow of suspicion upon syphilis.

The whole clinical picture may be even further divorced from the apparent realm of syphilis in those cases where the exanthem is limited to mucosal surfaces alone, with no telltale cutaneous eruption visible. Particularly can this be true in that totally unsuspected group of mucous membrane relapse, wherein all that is detectable to the examiner are the pulmonary findings and a positive serology, hardly enough to inculpate the *Spirochaeta pallida*. And many cases in the literature do show a definite tendency to relapse, particularly emphasized by the patients of Henske and of Ornstein. For the lack of more convincing evidence, a diagnosis of bacterial infection of the lungs or respiratory tree is made, and the positive serology accepted merely as evidence of "syphilis, latent."

The possible rôle of early pulmonary syphilis in the later evolution of the disease may also be turned into evidence in favor of its existence. Moore¹⁰ finds that in the large majority of cases of neurosyphilis, invasion of the central nervous system occurs within the first few months of infection, and occasionally during a second period of generalization of the disease characterized by clinical and serological relapse. Hopkins,¹¹ in a supplementary report, noted that patients with latent syphilis and negative spinal fluid rarely developed parenchymatous involvement of the central nervous system; and in the very few cases which did, the infection was mild.

If we align these facts with those herein discussed, acute pulmonary syphilis can well represent the period of invasion occurring early in the infection. This is usually followed by quiescence for the usual period of time, after which the more familiar symptom complex of late pulmonary syphilis may make its appearance. Or the pulmonary involvement may similarly occur during a second generalization of the spirochaete, characterized by mucous membrane relapse involving the mucous membranes of the lower respiratory system, with or without cutaneous manifestation.

Positive proof, unfortunately, cannot be produced in a disease so rarely fatal in its early stages as syphilis, and one so readily amenable to treatment. Any evidence proffered is subject to doubt and incredulity; it is only in the rare instance that surprising material may be discovered. Henske's⁹ patient exhibited early cutaneous syphilis which was treated and followed in a short period by relapse. During the course of the relapse the patient developed an acute and very classical lobar pneumonia; in fact, the course and findings were so typical that syphilis was not suspected at all, and it was not until the lungs had been examined under the microscope that the *Spirochaeta pallida* was found present, alone and in great profusion.

REPORT OF CASE

R. C., white, male, age forty-five, single, was admitted to the Los Angeles County General Hospital on August 29, 1930. In his history he had noted a penile sore of four weeks' duration; "cold," with cough

of two weeks' duration, and onset of fever and weakness two days before admission. Positive findings on physical examination revealed a fairly sick man, flushed cheeks, large tonsils, and on his oral mucosa several yellowish grey plaques surmounting reddish bases. Dullness over apices of both lungs, increase in transmission of voice and breath sounds, tubular breathing and moist râles anteriorly from the fourth rib upward; blood pressure, 110/66; rubbed off, infiltrated ulcer on underside of the penis. A clinical diagnosis of pneumonia, syphilis primary of the penis, and syphilis secondary (mucous membrane of throat) was made.

Laboratory data showed a normal urine, elevated white count, and 100 per cent inhibition in the Kolmer, and complete precipitation in the Kahn tests on blood serum. Darkfield examination of penile sore negative. X-ray of the chest revealed area of homogeneous density in the upper right lobe, consistent with lobar pneumonia, with early empyema to be ruled out.

On the third day after admission the patient was very sick and toxic, and reexamination showed extension of the pneumonia over the entire upper third of the right lung. Diagnosis of lobar pneumonia was confirmed, and possibility of an acute tuberculous pneumonia considered.

On the fourth day the patient was delirious and ran a high fever. A visiting physician again confirmed the diagnosis of lobar pneumonia, with the suggestion that the slightly irregular clinical picture might be due to syphilis.

On the next few days the temperature remitted slightly, but on the ninth day a sharp rise occurred, accompanied by delirium. The white count at this time was 19,480. On the eleventh day, 0.3 grams of sulpharsphenamin was given intravenously. At this time there was still evidence of consolidation in the right upper lobe. On the following day there was another abrupt rise in temperature with increased toxicity, with white count at 26,350, 81 per cent polymorphonuclears. X-rays revealed a decrease in density in the right upper lobe, suggestive of partial resolution with a density extending downward, suggestive of extension of consolidation to the base.

On the fourteenth day a second dose of sulpharsphenamin, 0.3 grams, was given intravenously. On the following day the temperature dropped to 99 degrees Fahrenheit and definite improvement in the patient noted. X-rays on the eighteenth day revealed clearing of the base. A third dose of sulpharsphenamin was given on the twenty-first day. X-ray, then, revealed the lung fields to be clearer than at any previous examination, but still presenting irregular coarse granular infiltration in the right upper lobe, a high diaphragm on the right, and retraction of the mediastinum to the right. Under weekly injections of sulpharsphenamin, the patient made rapid progress, and by the thirtieth day all physical findings were gone, the white count normal, and temperature flat for some time. X-ray three months later showed disappearance of retraction of mediastinum, persistence of high diaphragm, and some increase in lung markings.

Blood cultures were persistently negative.

Sputum studies were interesting. They were consistently negative for the tubercle bacillus. On the twenty-first day a specimen of sputum was taken. At this time the mouth and throat were clean, and smears were negative except for some pus cells and bacteria. The specimen consisted of a large, solid mass of mucopurulent sputum, which was washed repeatedly and carefully, and placed in formalin. The contaminated outside was discarded and the internal portion stained by the Levaditi method and examined. The report from the pathologist stated that examination of this preparation revealed spirochetes presenting the morphology of the *Spirochaeta pallida*.†

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† The authors wish to express their sincere thanks to Mr. A. A. Krajian for his kind assistance in preparing the tissue and in staining for spirochetes.

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DISCUSSION

H. W. STEPHENS, M. D. (384 Post Street, San Francisco).—The authors are to be congratulated on the excellent presentation of this somewhat hazy subject, namely, syphilis of the lung. The important literature concerning syphilis of the lung was reviewed in this paper, and the authors introduced thereby rather convincing proof that not only is an acute and early syphilitic infection of the lung possible, but probable. We are all familiar with the so-called "white pneumonia" of the new-born heredosyphilitic, and with gummata of the lung, which represents the late stage

of syphilis of the lung. We are not familiar with the acute pneumonic form of which the authors speak because we have no means of identifying this type definitely. Patients, whom we believe to have this form of syphilitic disease, rarely, if ever, die and therefore we have neither gross nor histopathologic description. The clinical history, and the roentgen-ray and sputum studies are too variable to be helpful, so that our diagnosis of acute syphilitic pneumonia necessarily must be presumptive. The case presented by the authors as one of acute syphilitic pneumonia was so diagnosed because of the apparently favorable reaction of the patient to antisiphilitic therapy and the possible demonstration of the *Spirocheta pallida* in the sputum. A medical consultant in the same case justifiably questioned the diagnosis; surely the fact that a spirochete, resembling the *Spirocheta pallida*, was found in the sputum is not sufficient evidence upon which to make a diagnosis unless it is supported by careful cultural studies and animal inoculations.

The authors most ably presented and emphasized an acute disease which many of us undoubtedly overlook many times a year; our knowledge of the acute manifestations of syphilitic pneumopathy is increased by this manuscript and an added stimulus is given to further investigative study.

✱

NORMAN EPSTEIN, M. D. (450 Sutter Street, San Francisco).—Respiratory infections which could be attributed to syphilis have been very rare in our experience at the University of California. During the past ten years only one patient was observed in which a fibrosis of the bronchial tree of both lungs was present, apparently the end-result of a syphilitic infection.

In conjunction with the chest department we have been much interested in this subject. A number of patients with secondary syphilis have been examined clinically by Dr. S. Shipman, and also radiologically, but to date no definite evidence of syphilitic involvement of the lungs has been obtained. It was felt that bronchoscopic examination of these patients was too dangerous for the operator to be undertaken, although such an investigation would be of considerable interest.

The diagnosis of syphilitic infections of the respiratory tract is very difficult and surrounded with many uncertainties. But we must agree with the authors that they occur and probably more frequently than we are aware. The subject is also of considerable importance, particularly from the standpoint of therapy. In the presence of a respiratory infection, we are loathe to administer intensive antiluetic therapy, yet the patient with syphilis of the lung is in need of just such treatment. At times this problem can be quite baffling, but by making use of the improved methods for diagnosis of intrathoracic disease and by careful consideration of each individual case, fewer errors in therapy should be made.

The authors have presented a case with sufficient evidence to establish a diagnosis of syphilitic pneumonia and have thoroughly reviewed the subject. They are to be congratulated for bringing the condition to our attention.

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BARCLAY E. NOBLE, M. D. (523 West Sixth Street, Los Angeles).—The authors' careful review of the literature is very interesting and brings out clearly that we have few clinical criteria for diagnosing "syphilitic pneumonia," and that opinions are more numerous than facts.

The patient here presented was on the pneumonia service, so it was my good fortune to see him daily and discuss this very peculiar case with some fifteen different consultants, including Doctor Chambers. The chest men were specially interested in the marked retraction of the mediastinum to the side of the lesion in the first fourteen days of illness; the gradual "creeping" of the consolidation from apex to base with "clearing" behind; the sputum, which was scant, viscid, bloody, and raised only one to two times a day for one month; the clubbing of the fingers, beginning about the twenty-eighth day; and the greatly pro-

tracted course with the patient still having definite pulmonary changes (a band of opacity in the region of the upper right mediastinal pleura and persistent moderate retraction of mediastinum toward side of original lesion without visible fibrosis) at the time of his discharge on his one hundred fifteenth day.

The evidence for syphilitic pneumonia has been ably presented. Most of the men in the chest department were reluctant to accept this diagnosis, since this vagrant, though proud of his "conquests," denied intercourse for the six months preceding his penile lesion; several darkfield examinations of material from the penile lesion, lesions in mouth and sputum were negative, while fusiform bacilli and spirilla were found among other bacteria, in all smears; the Wassermann and Kahn reactions became negative after four injections of three-tenths of a gram of sulpharsphenamin and one dose (one-sixth gram) of mercury succinimid; the Fontana smears of the sputum were negative; and Krajan's Levaditi method was here used for the first time and so is open to question, particularly since many spirilla were present.

Dr. D. D. Comstock, senior attending man in charge of the patient, thought the most likely diagnosis was a pneumococcal pneumonia modified by secondary lues. (Pneumococci were found repeatedly in the sputum.) Personally I should like to think I had seen a "syphilitic pneumonia," but the presence of fusiform bacilli and spirillae in all examinations, and the prompt response to arsphenamins make me feel that a mixed infection with Vincent's organisms is a more likely diagnosis. Perhaps here the added organisms necessary for abscess formation were lacking.

In closing, I wish to express my appreciation to the authors for asking one with a different opinion to discuss their paper.

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DOCTORS OLSAN AND CHAMBERS (Closing).—The authors in closing refer to the points under discussion as having been adequately covered in the contents of the text. Acknowledgment is made in appreciation of the thoughts expressed by Doctors Epstein, Stephens, and Noble in their discussions.

THE LURE OF MEDICAL HISTORY*

JOHANN SIGISMUND ELSHOLTZ

(1623-1688)†

CLYSMATICA NOVA (1665): ELSHOLTZ' NEGLECTED
WORK ON INTRAVENOUS INJECTION

By ETHEL GLADSTONE
San Francisco

IV‡

CHAPTER IX. *Inferences Concerning the Diseases to Which This Art Is Applicable.*—It is clearly evident from the establishment of these facts, not only that transfusion of blood is possible, but that it is permissible to inject in the veins of sick people medicinal and health-giving liquids, according to the circumstances. Still, there is absolutely no doubt that drugs injected in this

manner can kill a man equally or more swiftly than the poisoned weapons of the Americans, of which frequent mention is made in books of navigation written about the New World. Nor should we believe that all of those very sudden and horrible symptoms which are told of in those books have been produced in the wounded save only through the disturbance of their blood.

But in considering drugs which are healing and suitable to human nature, I think that, first, we should immediately make a distinction between those whose use is more suitable either to the organs of the abdomen, or to the head and brain, and those which especially counteract diseases of the heart and therefore are applicable to the middle cavity of the body.

If you consider, you will see that cathartics, emetics, and narcotics are prominent among the former drugs. *Purges*, since they must cleanse the stomach, intestines, and kindred organs, are more easily taken through the mouth than through a vein. Hence Hippocrates insisted long ago in his time that the closest channels should always be chosen, and that material should be carried away through convenient places (Bk. I, Aphor. 21).

Emetics, to wash the stomach, are given in the same way; for the chest is cleansed at the same time. In this case, too, the mouth is the closer way to the stomach.

Narcotics, since their strength exerts itself chiefly in the head, go nearer through the heart by the use of the clyster than if taken through the mouth. But I did not easily dare to find out the legitimate and safe dose of these and the preceding drugs for a man. For by a decree of the Magistrates, experiments of this kind first had to be undertaken on those who, because of their crimes, were condemned to public execution.

As to the other type of drugs, which are particularly good for heart diseases, there is scarcely any doubt that their infusion in the heart can be beneficial. An enumeration of the principal heart diseases follows:

I. Loss of strength, Leipothymia, and Syncope. To alleviate these, a certain cordial tincture would be suitable. It is prepared from coral, pearl, bezoar stone, amber, *confectio alchermes*, *aurum potable*, and similar material. Certainly it would be very desirable in syncope, when nothing can be taken by mouth, to inject a few drops of a tincture or essence of this kind through a vein to relieve the heart.

II. High Fevers, and Intemperate Heat of the Heart. Here some kind of delicate, cooling tincture would be excellent, especially if the patient is nauseated and refuses all remedies given by mouth.

III. Petechial Fever, Infection, and Poison Transmitted either through Food or Drink. The heart suffers greatly from all these, and it frequently happens either that the throat is constricted or its strength is so exhausted that nothing more can be poured in through the mouth. In this case orvioto dissolved in *aqua theriacalis*, or some other precious poison antidote, is of the greatest benefit and saves many people.

* A Twenty-five Years Ago column, made up of excerpts from the official journal of the California Medical Association of twenty-five years ago, is printed in each issue of CALIFORNIA AND WESTERN MEDICINE. The column is one of the regular features of the Miscellany Department of CALIFORNIA AND WESTERN MEDICINE, and its page number will be found on the front cover index.

† From the University of California Medical School Library.

‡ Part I of this translation of the *Clysmatica Nova* of Elsholtz was printed in CALIFORNIA AND WESTERN MEDICINE, June, 1933, page 432; Part II in July, page 45; Part III in August, page 119.

IV. Palpitation of the Heart. Until the present time it has been extremely difficult to cure this malady, because remedies taken through the mouth were compelled to go through too long a channel to the heart. Now that a closer way has been found, perhaps this disease will be more easily done away with.

V. Besides the diseases just enumerated, there is this to be considered, too: blood is carried from the right sinus of the heart through the lungs in a small, peculiar circle and, moreover, in this passage penetrates their parenchyma as a whole. Since this is so, it is true that in phthisis suitable drugs can be transmitted much more closely to the lungs in this way than if taken by mouth.

VI. In bad cases of apoplexy, epilepsy, angina, suffocation of the uterus, and similar acute and sudden diseases, good practitioners know how often, to the consternation of the doctor and the people at hand, all medication through the mouth fails. But when people are so ill, with their lives in such danger, what should prevent help being given, no matter how unusual the method? This cure, which is unique, would be safe enough, according to Cornelius Celsus.

VII. Moreover, the heart not only was not formerly considered such a primary blood-making organ by Aristotle as it is today by the majority of modern physicians, but also the blood contained in the whole body goes through the heart without cessation. This being true, it is permissible to conclude that in cases of scurvy, podagra, cachexia, venereal infection, and diseases of this kind, in which there is a mass of blood which is impure or infected in some other way, a prepared tincture can be beneficially injected in the tainted blood. If anyone possesses a *tinctura philosophorum universalis* or a certain other long-sought panacea, he can bring it into use at this time and in this way, and so gain outstanding renown.

In particular, we must certainly conclude about the use of transfusion.

I. That one animal can live by means of the blood of another; or that animals which have too little blood or whose blood is infected can be restored to health by substituting blood taken from other animals, and by taking care, when it is infused in suitable quantities, that the infusion is repeated as often as necessary, since blood in itself is easily dissipated.

II. Although Dn. Dionysius, (as we mentioned in Chapter VI) sets forth quite plausible reasons why the blood of animals is more suitable for transfusion than that of men, still, on the contrary, it cannot be denied that men's health is of noticeable extent. There surely are very robust young men in perfect health, and it certainly does not seem at all absurd that they can be of use, because of their superabundance of blood, to feeble old people or to others weakened by disease.

III. If we had exact knowledge of temperaments, we could attempt to find out whether, by infusing the temperate blood of a melancholic into a sanguineous or the heavy blood of a phlegmatic into a choleric, we could gradually correct and modify them reciprocally.

IV. Diseases arising from corrosion of blood, as, for instance, many types of ulcers, are generally cured with difficulty, because drugs taken through the mouth lose a large part of their strength on the way. But new, very temperate blood, transfused either from another man or from a lamb, a calf, or a similar animal, seems to give relief more promptly and safely, since it goes directly to the part affected. Time will disclose further uses.

Chapter X. *Other Uses.*—But let us proceed farther and find out whether this new science can be of use in another way, also. Surely it is known how much zeal those authors expend, who write books about diseases of the human body transplanted into trees. Moreover, they all, without exception, take care that their readers should not suspect them of sorcery, and so of being enabled to do all these things through lawful magic, sympathy, or magnetic force.

Thus toothache, along with some blood, is lured from the gums into an elder-tree. Furthermore, they undertake to cure gout by drawing forth the blood from the feet by scarification and pouring it three times into a young willow-tree; and they attempt many other cures of this kind.

But if there is anything to these magnetic cures, a quicker and more certain method would be to transfuse afflictions of this sort, together with the blood, into beasts, rather than trees. For plants are farther from human nature than animals, and brutes would draw the infection of disease into themselves more easily than vegetables.

Moreover, most compilers of secrets (among whom is the author of the German *Steganology*, who is generally believed to be Daniel Suentus, a mathematician of Nuremberg, in bk. III, num. 5, and also Joannes Staricus in the *Thesaurus of Heroes* pt. 2), make mention of a mystery, the benefit of which has been established so that, even in widely separated regions, friendly minds can relate ideas to each other in a short time.

These writers further advise that before Mars and Mercury separate, Mars should wound himself slightly on the forearm with a lancet and let the blood flow until it is completely dry. Mercury should wound his finger in the same way, taking care that two or three drops of his blood drip into Mars's wound. Then a plaster is placed over the wound so that the drops of blood will remain and combine with it. Conversely Mercury gives himself a slight wound in his forearm and takes in it some drops of blood from Mars's finger, so that each will have in his forearm a little of the other's blood.

Then they assert that the scars which remain after the wounds heal will be completely sympathetic; so that if Mercury pricks his scar with a needle, Mars, who is not present, because some of his blood is in that scar, will feel the prick in his own; and conversely. But before they separate they must agree about what is to be understood by a single, double, or triple prick; and in this way the authors think that these friends or brothers, because of the agreement between them, will be able to speak to each other about certain

questions without mistake, and as often as they please.

I certainly do not wish to undertake a defense of this mystery now; let those who have experienced it, believe it. Nevertheless it is well known that mortal minds have long been occupied in discovering a method by which, through the injection of one person's blood into the body of another, an important and praiseworthy achievement would be accomplished; that is, by gaining control of that sympathy sung of in all ages.

Meanwhile, if we may be permitted to continue with our own inferences, let us simply carry this open secret further, to other uses. In ordinary life, there is much too frequent, and sometimes implacable, dissension between blood brothers, and also between husband and wife; but an efficacious remedy for this evil is scarcely ever sought.

What if a transfusion of blood, a mutual one, were made between the quarreling husband and wife? For if the spirits in the husband's blood were mingled with those in the wife's body, and conversely, those in the wife were mixed with the spirits in the husband's body, would the couple be mutually united in sweet harmony?

Certainly much good should be expected from this, unless the statements which philosophers have made about the strength of sympathy are all false.

The operation in itself is safe and not difficult, especially if it is done with syringes, not with tubes; the following chapter should be consulted about this difference. And if this operation between a disagreeing husband and wife should prove successful, this unparalleled mystery would be of much profit to the public welfare—and would be able to make some doctor rich. Besides, a doctor who excelled in this art would merit the name of conciliator in the commonwealth by greater right than Peter of Abano did.

Chapter XI. *The Method of Operating is Repeated.*—Before I bring this little book to a close, it seems wise at this point to repeat and explain briefly the method which should be observed in the operation, in accordance with the different branches of the discovery. But indeed, in Chapter IV, we explained everything that pertains to simple infusion so clearly, with different experiments and two illustrations, that the directions would be uselessly retold here; since, following the example of those words, no one can feel uneasy about injecting various liquids through the veins, both in animals and in men.

Next, let us consider that other branch, in which blood is transfused from one animal to another, or from an animal to a man, or from one man to another. This should be done through tubes, as is described and illustrated in Chapters VI and VII. Although this method seems very laborious, it is nevertheless excellent, and is able best of all to preserve the spirits of the flowing blood and prevent them from evaporating. But a still easier method is to use a syringe, but one a little larger than that which is employed in simple infusion.

If a transfusion is to be made from a lamb to a man, first, the point of the syringe should be

closed up very exactly by a rather thick needle. Then, when the plunger is drawn back, the piston becomes moderately warm. Next, either an artery or another major vein of the lamb is opened, and the flow of blood is checked by a finger placed over it, until the warm piston has been applied to the wound.

Moreover, four observations must be pointed out here. The limb in which you have opened the vein should be turned upwards (1) So that the blood can slip down perpendicularly into the piston which has been placed under it. (2) So that the piston can be applied closely enough to the opened vein to prevent the dissipation of the spirits. (3) So that the piston will not be filled to the rim, but a space the size of a thumb's breadth will be left. (4) So that when the blood has flowed into the piston, the plunger can be thrust in without delay.

When these things have been attended to, leaving the lamb, you should turn to the man, who is to receive the extracted blood. An assistant should skillfully open a vein in his elbow or leg, or should hold one which has already been opened. Then you should gently thrust the point of the syringe, with the needle removed, into the opened vein and compress the skin, holding in the warm blood. Then gradually thrusting the plunger between the assistant's fingers, you should direct it toward the heart, as has also been shown in Chapter IV, Figure II.

Finally, in reference to mutual transfusion between two men, anyone who understands the method of simple transfusion, through a syringe, now thoroughly explained, cannot be ignorant of the method to be used in reciprocal. The only difference is that in reciprocal transfusion two syringes are required, while one is sufficient for simple. Obviously, the extraction of blood in each man must be performed at the same time, before you begin the infusion; then the blood which has been extracted should be injected in each at the same time, so that duplicate apparatus is absolutely necessary.

If this operation should be performed through tubes, it would be far more laborious than if done with syringes; but no more impossible than if someone should ask for a transfusion from his right forearm to his left. Just as the veins must be opened in each forearm of that man and tubes inserted, so also if two men desire transfusion. For Mars must give blood from his right forearm to Mercury's left one, and in turn should receive blood from Mercury's right forearm in his left one. Meanwhile, a ligature should be applied to the right upper arm of each; and the curved ends of the tubes, when they are inserted, must be properly directed to pour out and receive blood.

Chapter XII. *Conclusion.*—Finally, therefore, from these facts which have been published, it is evident that the seeds of this discovery have now been scattered through the principal regions of Europe, and that through skillful industry they will gradually bear much fruit of benefit to the sick, if I am not deceived. Moreover, the method

is well known by which this work, in all its branches, can be successfully performed on man, as well as brutes.

Besides, since it is now common knowledge that the French are attempting to take the disputed glory of this discovery from the English, and the English from everyone else, let us as scholars fittingly call to mind what M. Cicero once said to the men of his time, and which is just as true today: "Each man, in his turn, contrives snares for himself."

But let the Italians contend with the French about their priority, and the English with the Germans; perhaps they all are right, since their ideas about the subject coincide. It is just the same as when, long ago, Anacharsus Scythia and Hyperbus Corinthus invented the potter's wheel at the same time in widely separated places. This conformity the Greeks oddly call *concurrence*, or coincidence; one brings lime and sand, another water and building material, when a king's palace is to be constructed; this work, too, will progress in the same way.

However, ambition does not trouble me greatly, so that I would grudge that bit of fame to others; I am very far from ascribing praise to myself with my own words. For it is found in the Sacred Writings, "Let another man praise thee and not thine own mouth; a stranger, and not thine own lips." Proverbs, xxvii, 2.

Nevertheless, since this question has been aired seriously here and there, it does not seem to me that I am mistaken, or that I am unjust to anyone, if I believe that I first made in suitable quantity and adequate variety the experiments in simple infusion on which this whole discovery depends; and that I then first combined these experiments properly (and certainly this is the hinge on which the whole affair turns).

Surely speculations alone are not sufficient in this case, or conversations held with friends, and similar dissertations, of which type was that of Dom. Robert des Gabets of the Benedictine Order, cited in the *French Journal*. There is need instead of experiments made by hand, and of published writings.

Anything that was attempted long ago at London or in France seems to have been done purely for individual research; before the sixty-fifth year of this century, when our *Clyster* first appeared, no book by the French or English, much less the Italians (as I absolutely know), had been published about this discovery.

But come, let us leave this contention, for you will say, by no means undeservedly, that we have been arguing about an impoverished kingdom. Let us, rather, exhort all doctors and surgeons, now that the ice is broken, not to continue in their idleness and carelessness; but rather to become interested in the safe remedies which can be applied in this new way, to be eager to get proofs of this discovery whenever the occasion presents itself, and to continue to strengthen this growing art for the greatest glory of the most gracious God, and for the health of the sick.

FINIS

CLINICAL NOTES AND CASE REPORTS

RUPTURE OF UTERUS *

By LEON J. TIBER, M. D.
Los Angeles

BETWEEN February 1 and April 1, 1932, two patients with ruptured uterus were admitted to the Obstetrical Service of the Los Angeles General Hospital. These cases were similar in that they both occurred during pregnancy and each rupture occurred at the site of a previous classic cesarean section scar. The uterus was removed in each case and the patients recovered.

REPORT OF CASES

CASE 1.—On February 12, 1932, W. T., white, age twenty-five, seven months pregnant. Her first pregnancy terminated by classic cesarean section two years before. With the first pregnancy, patient had ruptured the bag of waters spontaneously and was in dry labor thirty-six to forty-eight hours. Cesarean section had been performed on account of (1) cephalopelvic disproportion, (2) mouth of uterus calloused (?). Patient discharged home thirteen days after operation, with "bleeding navel," which had healed one week later. Ventral hernia followed operation.

Patient had abortion in January, 1931. Last normal menstruation July 16, 1931. Six weeks later patient noticed a pulling pain about navel and pain in lower left side of abdomen. At clinic was assured she was normally pregnant.

On January 25, 1932, patient had a sharp pain in abdomen after which a slight and painless bleeding began. Admitted to St. Vincent's Hospital, where she remained under observation for one week, during which time bleeding ceased.

On February 11, while at stool, patient again had sharp pain in abdomen, became faint, then began to bleed from the vagina. Was seen by City Maternity doctor, but no examination was made until patient was admitted to this hospital.

During early evening patient began to bleed profusely, bright red blood, saturating seven pads. Then bleeding discontinued throughout night. During day of February 12, patient used seven pads, saturating three. Passed small clots throughout day, while character of the bleeding changed from serosanguinous discharge to brownish discharge.

Examination showed uterus two fingers above umbilicus. F. H. T. not made out. Souffle present in left abdomen, quite loud. No vaginal bleeding at time of examination. Temperature, 99.4; pulse, 108; respiration, 20; blood pressure, 120/75.

Patient was operated on that day at 11:30 p. m. The uterus was found to be ruptured in two places along the site of the old scar, each opening about three centimeters in diameter. One tear was in fundus, the other about three and one-half centimeters lower, with intervening scar still intact. An anteriorly implanted placenta protruded from the ruptured areas. There was no active bleeding nor was there free blood in the abdominal cavity. The uterus was opened and hand thrust through placenta; fetus delivered alive at 12:10 a. m. Supravaginal hysterectomy and hernia repair performed, the patient leaving the operating room in fair condition. Patient made an uneventful recovery. Baby died. Patient sent to her home on March 5.

CASE 2.—On March 9, 1932, V. D., white, age eighteen, at term of her second pregnancy. The first

* From the Obstetrical Service of Doctor Lazard at the Los Angeles County General Hospital, Unit No. 1. Reported with his permission.

pregnancy terminated by classic cesarean section one year before, after which she made an uneventful recovery.

Patient suffered no unusual symptoms during this, her second pregnancy, until March 8, on which day she was admitted to a small maternity hospital. On this date labor pains began at 8 a. m. and continued at ten-minute intervals throughout the day. At 6 p. m. patient had a sudden sharp, stabbing pain in the abdomen, after which labor pains ceased. At 9 p. m. patient started to faint and continued to faint, until given a hypodermic, after which she slept till 6 a. m. On awaking, patient discovered she had been bleeding vaginally during the night and had severe abdominal pains and cramps. Pain was markedly aggravated by any motion. Patient was then seen by a physician and was immediately transferred to this hospital and operation done at 12 noon.

Patient was admitted in a state of shock and showed marked pallor. Temperature, 101; pulse, 128 and thready; respiration, 32; rapid, shallow, and labored increased breath sounds throughout chest anteriorly; heart rapid and weak; blood pressure, 96/60; hemoglobin, 60 per cent; red blood cells, 2,600,000; white blood cells, 18,800; polymorphonuclears, 90 per cent; lymphocytes, 10 per cent; urine negative; no active bleeding vaginally. The abdomen distended, tense, very rigid; peritoneal reflexes positive; fetal parts not palpable nor could any F. H. T. be heard.

Immediately upon opening the peritoneum there was a sudden gush of blood and the placenta exuded intact. The fetus, surrounded by its unruptured bag of waters, was found to be lying free in the abdominal cavity. It was removed by breech extraction. Baby was still-born.

The uterus was found to be completely ruptured on the anterior surface over the entire length of the old scar. It was contracted firmly down in the pelvis and was not bleeding. The uterus was removed supravaginally. The abdomen contained at least one quart of blood and blood-clots, which were removed before the abdomen was closed.

During the operation patient was given stimulants as well as intravenous medication. These were followed by a transfusion. Patient left operating room in critical condition, but much better than on admission.

Patient made an uneventful recovery and was discharged from the hospital on March 27.

COMMENT

1. The scar of the classic cesarean section may rupture during labor or at any time during the last three months of pregnancy.
2. In one of these patients the location of the placenta over the scar seemed to have acted as a plug and prevented hemorrhage.
3. The first symptom noted in these patients was severe, sharp abdominal pain.
4. In one case the rupture of the scar allowed the uterus to completely empty itself, thus effecting good contraction and retraction which prevented hemorrhage.
5. A common sign of rupture of the uterus during or preceding labor is external bleeding.
6. Scar tissue from the former cesarean was present in abundance in each of these patients and the line of rupture was in the scar tissue.
7. In view of the fact that there is danger of a second rupture in subsequent pregnancy, and because of the time required to freshen scar edges, it is, by some, considered good practice to remove the uterus in these cases.

FURTHER OBSERVATIONS ON VACCINE THERAPY IN RESPIRATORY CONDITIONS*

By FRANCIS WILLIAMS, M. D.
San Francisco

THE following remarks are based chiefly upon the use of mixed respiratory vaccines in the treatment of common colds. My apology for presenting the topic is that since I presented a previous paper on the subject about fifteen years ago, few, if any, papers upon the subject have come before the society.

Mixed respiratory stock vaccines have been used for colds in the head, throat, and lungs; pertussis; epidemic influenza; asthma, chiefly in children and young adults; and pneumonia. We have had most experience with colds. The initial dose of mixed vaccines (respiratory type) used varied from .2 to .3 for children under ten years, up to .5 to .6 for young people and adults. The treatment is repeated at two to four-day intervals with an increase of 25 per cent in the dosage, and continued until a course of three to six injections have been given.

Just a word as to site for the injection: The gluteal area, just high enough to avoid pressure when sitting and usually on the left, as most persons sleep on the right. The anterior axillary fold is another good site, just above the breast, especially for women and fleshy men. A mild local reaction is usual, but at times associated muscles react and become lame or sore. Occasionally there occurs a constitutional reaction with fever and gripe symptoms. At times it is difficult to separate a vaccine reaction from the precipitation of an attack possibly pending, or actually induced during the negative phase of a vaccine reaction. The reactions or attacks are usually brief, from a few hours to a day or two, and recovery with improvement is the rule. The majority of patients are scarcely conscious of the reaction stage, but note improvement in twelve to twenty-four hours.

Many persons are conscious of such distinct help from the vaccine therapy that they form the habit of presenting themselves in the early stages of a cold for a vaccine, or serum as they frequently designate it. The permanency of such immunity as the vaccine confers varies, apparently from only a few weeks to over a year. It would be readily agreed that natural immunity varies to the same degree. It is difficult to state an average duration, but three to six months would probably be a fair estimate of the time during which immunity continues in greater or less degree. I have never seen a case made worse or whose immunity was reduced by respiratory vaccines, but have seen a few that gave such severe local reaction that it seemed inadvisable to use it further. One patient developed a small local abscess in the first injection site, and a smaller one at the second injection.

There is more prompt relief in colds of the head and upper respiratory tract than in bronchial con-

* Read before the San Francisco County Medical Society, October 4, 1932.

ditions, but much may also be accomplished in the latter. Whooping-cough if treated early is favorably affected both as to duration and intensity, and even when treated later is usually aided, especially in conjunction with x-ray treatment of sufficient intensity, to reduce the congested lymphoid tissue of the hilus area.

As to the value of vaccine therapy in pneumonia, my impression favors its prophylactic value. It has been true that I knew of no case of pneumonia arising from the portion of my clientele accustomed to vaccine therapy for the treatment of colds. This held true even during the great influenza epidemic, at which date I had been using respiratory vaccines rather freely for four or five years. During this epidemic I gained the impression that patients accustomed to the vaccines had influenza in a lighter form, and escaped the pneumonic type.

Border-line asthmatic cases, comprising especially asthmatic symptoms associated with incipient chronic bronchitis, are favorably affected by vaccines plus x-ray radiation of the bronchial glands. The value of x-ray as an aid probably results from its action on congested lymphoid tissue. The treatment of asthma calls usually for all our resources, and often for a careful choice of agents in relation to cause. To test the patient's sensitiveness for all the pollen and dietary groups is, to the average physician and his patient, rather a tedious and bewildering process, and the results not always conclusive to the average professional eye. One is tempted to try a short cut, even if the means used resembles the "shot-gun" type. To this end we have often succeeded by using a combination of mixed respiratory vaccine and a seasonal type of mixed pollen vaccine, such as the vernal Timothy type, or autumnal Ragweed type of Mulford, using .2 in conjunction with .5 to 1. of the mixed respiratory type, about twice a week. Personally, I found this to be effective preparation for vacation trips into the high Sierra. My earlier trips were marred by severe rhinitis and epistaxis. After adopting the precaution of taking two Timothy pollen and mixed respiratory vaccine injections the week prior to my departure, I had no further trouble. The same is true for the susceptible members of my family.

Asthmatic cases are further benefited by asthmolysin of Doctor Kade, or its equivalent of pituitrin and adrenalin, if you prefer. And with this I usually use sufficient x-ray radiation to insure reduction of any congested lymphoid tissue that may be present. The asthma of young children is usually of endocrine type and favorably treated by x-ray and quartz light, but one may combine mixed respiratory vaccine to increase immunity and free them from bacterial sensitivity. The use of a No. 27 sharp needle, and the buttock as a site of injection, usually enables one to gain the child's cooperation.

It appears to be a reasonable conclusion that the practice of using mixed respiratory vaccines lessens the incidence of the common cold, and shortens its duration and danger when it does

occur. The incidence and fatality of pneumonia are probably lessened; and reinforced by other measures, these vaccines are of use in the treatment of asthma.

1222 Flood Building.

ACUTE LEUKEMIA*

REPORT OF CASE

By WILLIAM H. BARROW, M. D.
San Diego

THE acute leukemias constitute a clinical entity of unknown etiology, dramatic in their progress, fatal in their outcome, and with a morphology and pathology that are usually not definitely indicative of whether the condition is myeloblastic or lymphoblastic in origin. The first case of acute leukemia was reported in 1857, and for the next fifty years it was believed that all of the acute leukemias were primarily due to disturbance in the lymphoid tissues and that the large mononuclear cells, which predominate in the blood smears, were immature lymphocytes. More recently, however, there has been a swing of the pendulum and, although hematologists are by no means in accord in their differentiation of the leukemic cells, it is agreed that a very large proportion of the cases are myeloblastic in origin. The disease occurs almost universally in children and in young adults between the ages of twenty and forty. I know of only one case in the literature outside these age limits, Cleveland¹ reporting a case in a man of fifty-five.

There are presented herewith the history and pathologic findings of an acute leukemia in a woman of sixty-five which seems worth reporting because the disease is so uncommon at this age, and because the case demonstrates once more the difficulty in differentiating between the two recognized types of leukemia.

REPORT OF CASE

The patient, concerning whom a report is here made, was an active woman of sixty-five years of age. During the year of 1929, two years before her present illness, she had been under observation for a mild degree of hypertension and arteriosclerosis. One year later she had an attack of acute obstructive jaundice with fever, a polymorphonuclear leukocytosis and right upper quadrant tenderness and spasm. A laparotomy was done and a large abscess in the region of the gall-bladder was drained. Convalescence was prolonged but uneventful; except for the fact that three or four months subsequent to the operation she had another mild attack of fever and jaundice, which cleared up promptly. Otherwise there was nothing worthy of note in the past history.

On January 9, 1931, she was seen by her physician for what appeared to be an acute upper respiratory tract infection, with a general malaise, mild pharyngitis, and a temperature of 100 degrees Fahrenheit. For the next week she had an intermittent fever of between 101 and 103 degrees on alternate days, the fever in each case being accompanied by or preceded by malaise and chilliness, and breaking with a fairly severe sweat at night. A white count done on the sixth day was 3,450, and an examination of the blood smear revealed some red cell inclusions that suggested malarial organisms. She was therefore put on quinin

* Read before the Los Angeles Clinical and Pathological Society, January 28, 1932.

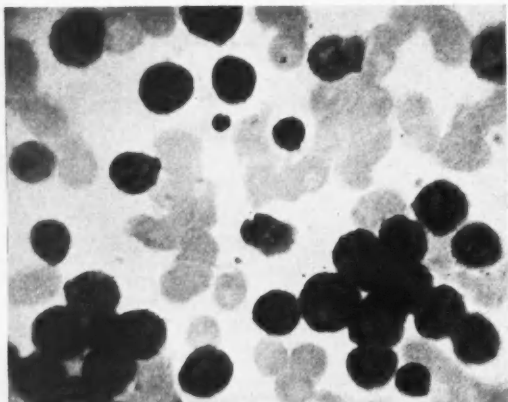


Fig. 1.—Blood smear showing marked predominance of large mononuclear cells which appear mottled because of presence of nucleoli. These cells vary in size and there are some degenerated forms. The field contains one neutrophilic polynuclear and one normoblast. Red cells show variation in size and shape.

for about a week. Her temperature came down to normal, where it remained until the nineteenth day, at which time she had a recurrence of fever and of her throat symptoms. At this time the white count was 8,550, with a preponderance of small mononuclear cells. By the twenty-third day there was a frank pharyngeal inflammation with enlargement of the right tonsil and the clinical appearance of a septic sore throat. The white count at this time had risen to 22,150. This acute throat condition was accompanied by a cervical adenitis, particularly on the right side, but there was not made out at this time or later any general glandular enlargement or splenic enlargement. On February 5, the twenty-seventh day of the disease, there was a marked secondary anemia and a white count of 281,000. The patient was obviously critically ill, suffering great pain and discomfort from her throat and from her general muscular weakness. On the following day she was transferred to the hospital, where she was seen in consultation. Blood counts taken during the next twenty-four hours showed a rapidly increasing anemia and leukocytosis (Fig. 1). Anemia occurring in these cases is secondary in type and due to an infiltration of the hemopoietic tissue by the leukemic cells. The increase in the leukocytes is indicated in the chart (Chart 1), but the differential count as reported is not particularly significant since these blood smears were examined by various technicians and pathologists and the large mononuclear cells

which predominated in all the smears were variously called large mononuclears, lymphoblasts, myeloblasts, premyelocytes, and immature lymphocytes. The oxidase stain did not reveal any granulation. The cells are therefore classified in this chart merely as large mononuclears or leukemic cells.

On physical examination the patient was obviously very toxic, the breath was foul, and as an indication of a hemorrhagic diathesis there were a hematemeses and a persistent bleeding from the gums. The tonsils and pharynx were markedly congested and inflamed. As mentioned before, the spleen was not palpable, and other than the moderate cervical adenitis there was no glandular enlargement. The rest of the physical examination was essentially negative. Laboratory investigation, other than the blood, was negative except for a trace of albumin and occasional red blood cells in the urine. Blood chemistry, blood culture, and Wassermann were negative.

During the night the patient was restless and irrational, and about 7 a. m. she became suddenly comatose and developed stertorous breathing. The left pupil was dilated, and there was well-marked choking of the disk. The pulse became weak and somewhat irregular, the respiration later became periodic in character, and she died at 5 p. m., just twenty-nine days from the acute onset of her illness.

At autopsy, examination of the head was not permitted, but from the clinical symptoms it is obvious that the patient died of a cerebral hemorrhage or thrombosis, which so commonly mark the exitus in these cases. The gross postmortem findings were remarkably uninteresting. Outside of a small sero-sanguinous pleural effusion and an obvious hyperemia of the bone marrow, spleen, liver, and other abdominal organs, the findings were essentially normal. The spleen was normal in size and weight. There was no general lymphatic glandular enlargement or gross adenopathy except in the cervical region, as was noted above.

Photomicrographs of some of the tissues are shown. Unfortunately the preparation of the bone marrow was not suitable for reproduction, but microscopic examination of this tissue showed it to be packed with leukemic cells with a relatively small number of red cells, and with the erythroblastic tissue destroyed. Low and high power magnification of the kidneys (Fig. 2) show both convoluted and collecting tubules filled with mononuclear cells, which have also invaded the connective tissue. A low power magnification of the liver tissue (Fig. 3) shows degeneration of the liver cells and areas where the liver cells have been completely displaced by the leukemic cells. The high power view of the same field shows this in more detail. The high power magnification of the spleen (Fig. 4) shows destruction of the normal splenic architecture and the sinuses packed with leukemic cells.

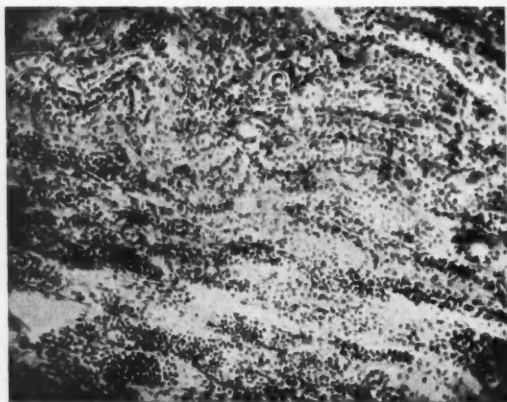


Fig. 2a

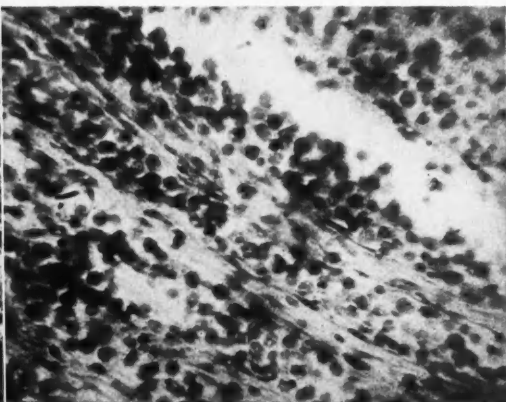


Fig. 2b

Fig. 2.—Kidney (low power and high power magnification) showing convoluted and collecting tubules filled with leukemic cells, which have also invaded the connective tissues.

CHART 1.—Blood Counts. The blood counts show the early subleukemic stage followed by the leukemia. The stained smears in the latter stages show a predominance of the large mononuclear leukemic cells which are not here further classified (see text).

Date	Hemo- globin	Red Blood Cells	White Blood Cells	Poly- morpho- nuclears	Small Mono- nuclears	Large Mononuclears and Leukemic Cells
Jan. 14	----	-----	3,450	----	----	----
15	----	-----	3,050	9	89	2
27	85	-----	6,550	13	71	16
31	----	-----	22,150	6	15	79
Feb. 5	60	1,280,000	281,600	----	8	92
6	55	2,580,000	320,000	3	2	95
7	50	2,620,000	439,900	2	1	97

COMMENT

Clinically and pathologically this case is perfectly typical of acute leukemia of either lymphatic or myelogenous origin. Particularly characteristic were the sudden onset with fever, the general malaise, the bleeding gums, the tonsillitis and cervical adenitis, and the early subleukemic phase of the white count. Cases without general glandular enlargement or splenomegaly such as this, cases with hemorrhage as the outstanding symptom, cases with glandular and splenic enlargement, and cases with only fever, anemia, and hemorrhage—all these variations occur in both myelogenous and lymphatic leukemia in the acute form. This clinical parallelism is pointed out by Ordway and Gorham,² as is the difficulty in differential diagnosis from blood and tissue morphology. They mention the fine distinction made between myeloblasts and lymphoblasts, the former having a deeply basophilic protoplasm and an azure-stained nucleus with four or five nucleoli, as compared with the lighter staining protoplasm, darker nucleus and the three or four nucleoli of the latter. Naegeli claims that in the large mononuclear cells, which characterize the blood smear

of an acute leukemia, careful staining and close scrutiny will reveal the neutrophilic granulation of the premyelocyte, and it is felt that it is because these cells were not in the past recognized that most acute leukemias were called lymphatic. The mature myelocytes seldom appear in any numbers and a small percentage is found in definite acute lymphatic leukemia. The oxidase stain is positive only in the more mature cells; and when, as in this case, it is negative it does not, therefore, rule out myelocytic leukemia. Finally the hematologists are by no means in accord in the matter. Pappenheim,^{2,3} disputes Naegeli's differentiation, claiming it is impossible in the early stages, both cells, in his belief, springing from a common progenitor, the hemocytoblast. Kwasniewski and Henning stated the differentiation was impossible in some cases, although they found a preponderance of eight cases of myelogenous leukemia to one of lymphatic after a careful hematologic study of twenty-seven cases.

This difficulty in diagnosis was evident in the case presented here. Blood smears taken at different times in the last three days of the disease were studied by four pathologists. Two of these men

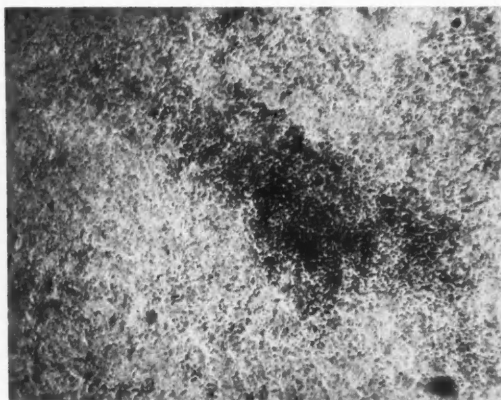


Fig. 3a

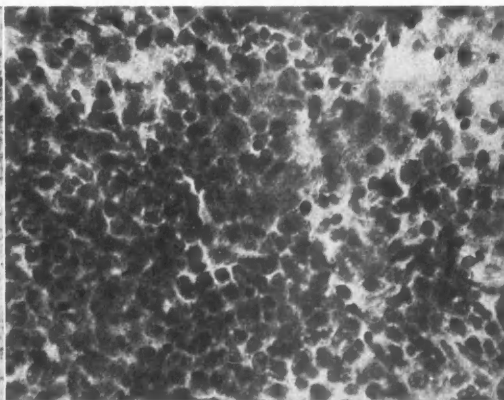


Fig. 3b

Fig. 3.—Liver (low and high power magnification) showing degeneration of liver cells and areas of infiltration by the leukemic cells.

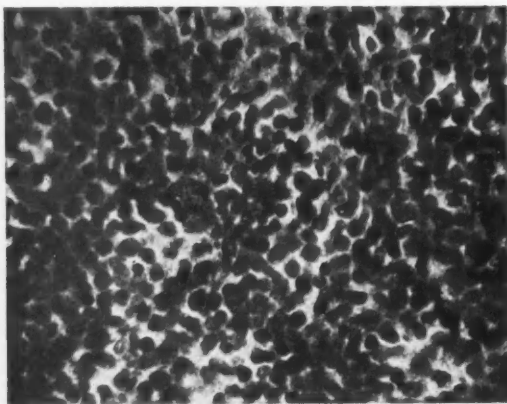


Fig. 4.—Spleen (high power magnification) showing destruction of splenic tissue and infiltration of sinuses with the leukemic cells.

characterized the mononuclears as myeloblastic and two as lymphoblastic. Two of the pathologists also studied the tissue slides and were again divided in their opinion.

Clinically the two diseases, if two there be, are identical and, regardless of whether the primary disturbance is in the bone marrow and spleen or in the lymphoid tissue, the disease as it progresses involves the whole hemopoietic system with the characteristic hyperplasia of the spleen, bone marrow, and lymph tissue.

SUMMARY

Acute leukemias, both myelogenous and lymphatic, are characterized by certain fairly uniform findings. They usually occur in children and in young adults. The onset is acute and the course fatal. The blood shows an early aleukemic or subleukemic stage, followed by the appearance of large mononuclear cells. Some of the clinical manifestations are fever, malaise, pharyngitis, a hemorrhagic diathesis, anemia, and also frequently enlargement of spleen and lymph glands. Pathologically there is hyperplasia of the bone marrow, lymph glands, liver, and spleen with invasion of these and other organs with leukemic cells. The differentiation between the myelogenous and lymphatic types of the disease is not possible unless there is definitely demonstrable the presence or absence of myeloid elements by the oxidase stain or by enzyme tissue reactions.

This case has been reported because of the occurrence of the disease in a woman of sixty-five, which is well outside the usual age limits, and because it demonstrates the difficulty of differentiating between the two forms of the disease in spite of complete hematologic and pathologic study.

Acknowledgment is made to Dr. W. S. Woolford of the Army Medical Corps for his careful and detailed record of the early stages of the patient's illness, and to Dr. H. A. Thompson for his cooperation in the preparation and study of the autopsy material.

233 A Street.

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Social Insurance in Austria.—Concerning the organization of social insurance in Austria, further details have been announced, from which the following figures have been taken. The many *krankenkassen* scattered throughout the country may be divided into six groups: (1) industrial workers, with about 1,000,000 members and compulsory insurance; (2) agricultural workers, 300,000; (3) mercantile and private employees, 280,000; (4) government employees, 170,000; (5) employees of transportation companies, including railways, 170,000; and (6) employees of the municipality of Vienna, 45,000, making a total of about 1,965,000 members. Of this number, 100 per cent are insured against disease, but only 60 per cent are insured against loss of employment; that is to say, about 40 per cent are enrolled under family insurance. The average monthly income of members of the *krankenkassen* is 156 shillings, or about \$22; the highest monthly income is only 200 shillings, or about \$30. On this basis the insured receives a weekly sick benefit during illness or a lump-sum compensation in case of accident. The members pay two-thirds and the employer one-third of the monthly insurance premiums, which average about 24 shillings, or \$3.60. The insured member thus pays from 10 to 13 per cent of his income to the *krankenkasse*, the maximum figure being 28.50 shillings, or \$4.28, for workers. In the case of employees who carry also old-age pension, the monthly premium amounts to about 14 or 15 per cent of the wages received. The total receipts of the *krankenkassen* in 1931 were 207,000,000 shillings, or \$31,050,000, 93 per cent of which sum was expended for insurance benefits, 60,000,000 shillings for medical aid, 30,000,000 for medicines, 41,000,000 for hospital care, and 62,000,000 for sick benefits. For accident insurance, 36,000,000 shillings was received and expended.—*Vienna News Letter, Journal of The American Medical Association*, Vol. 100, No. 21.

Treatment of Pernicious Anemia by Liver Extract.—McHenry and his associates found that liver extract prepared for intramuscular administration is safe, dependable and effective when used in adequate dosage. Administered intramuscularly, a given quantity of extract is much more potent (at least thirty times) than is the same amount given by mouth. The intramuscular administration of the extract from 10 to 20 grams of liver a day is fully as effective as the ingestion of the extract from 250 to 800 grams of liver daily. A good reticulocyte response has been obtained from the single injection of the extract from 50 grams of liver. Intramuscular liver therapy is of great value in the treatment of patients in severe relapse, to whom large doses can readily be given by this method with assurance of an early response. The remission begins about a week sooner than when the extract is administered by mouth. It is also useful in treating patients who refuse to continue to take sufficient amounts of liver or liver preparations by mouth. The intramuscular administration of the extract from 100 grams of liver a week in one or two doses is probably sufficient to maintain most patients with pernicious anemia in a good state of health. It is extremely important, in treatment by oral administration of liver or liver extracts, always to give a sufficient amount, no matter how much may be required, to maintain the patient in good health with no anemia and to prevent the appearance or progression of nervous lesions.—*Canadian Medical Association Journal*.

BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An Open Forum for brief discussions of the workaday problems of the bedside doctor. Suggestions of subjects for discussions invited.

HUMAN STERILIZATION*

F. O. BUTLER, M. D. (Sonoma State Home, Eldridge).—While the sterilization law of the mentally deficient has been on the statutes of California, since 1909, very few operations were performed prior to 1918.

On January 1 of this year we had sterilized a total of 2,264, which, according to available statistics, is by far the greatest number of sterilizations in any institution of this kind in this or any other country. Considering the number performed in the mental hospitals of the state, California takes the lead in approximately three-fourths of all such operations for sterilization in the United States, which also means probably the majority done in the entire world.

The casual observer might think we sterilize all those in the child-bearing period, but we wish to assure you it is only in selective cases, as will be observed in Table 1, which deals with the total discharges from the institution since the law became effective in 1909.

In this you will note that only 53.8 per cent of the cases discharged were sterilized.

The population at the time the law became

effective was 749, while now it is 3,536 enrolled with 2,462 actually in the institution, the balance, 1,074, being on leave of absence from short vacations to several months or years under the supervision of our Social Service Department, consisting of six social workers, which permits us to supervise all those away from the institution as may be required.

Of those discharged, it will be noted that 1,373 out of 1,857 (or 70.3 per cent) made successful adjustment, which we believe is a good percentage, considering so many of them were placed in other institutions, as noted at the foot of the table.

Of the above number discharged, a large proportion are successfully married, the majority with our permission and with the policy of being married for approximately two years before being discharged. Of this number of marriages, their success as to married life, being measured by the number of annulments and divorces, compares favorably with normal individuals. Marriages assist materially in stabilizing the defectives, and we credit considerable of their successful adjustment to successful marriage and we believe they should have this privilege in that they are unable to propagate, owing to the operation before leaving the institution. Some of the higher type have been permitted to have one or more of their children,

*In the December, 1928, issue of CALIFORNIA AND WESTERN MEDICINE, Vol. 29, No. 6, page 369, will be found an article on "Human Sexual Sterilization," by Suren H. Babington, M. D.

TABLE 1.—Report of Patients Discharged and Sterilized January 1, 1909, to January 1, 1933

Year	Discharged							Sterilized			
	Successful Adjustment			Unsatisfactory Adjustment			Total Discharged				
	Male	Female	Total	Male	Female	Total		Male	Female	Total	Per Cent
1909	12	10	22	2	3	5	27	..	..	..	.....
1910	17	10	27	1	6	7	34	..	..	..	.....
1911	14	13	27	0	1	1	28	..	..	..	.....
1912	11	3	14	3	1	4	18	..	..	..	.....
1913	18	9	27	0	4	4	31	..	..	..	.....
1914	8	3	11	0	4	4	15	0	1	1	6.6
1915	14	9	23	1	1	2	25	..	..	..	.....
1916	17	5	22	0	6	6	28	..	..	..	.....
1917	26	10	36	1	2	3	39	..	..	..	.....
1918	23	10	33	4	1	5	38	1	2	3	7.8
1919	28	9	37	3	2	5	42	6	4	10	23.8
1920	17	20	37	2	3	5	42	6	11	17	40.4
1921	21	7	28	27	7	34	62	21	11	32	51.6
1922	19	17	36	37	8	45	81	8	14	22	27.1
1923	14	22	36	16	9	25	61	13	18	31	50.8
1924	3	9	12	10	5	15	27	3	10	13	48.1
1925	4	10	14	13	12	25	39	6	16	22	56.4
1926	6	16	22	10	8	18	40	4	15	19	47.5
1927	31	32	63	15	26	41	104	22	45	67	64.4
1928	28	59	87	27	30	57	145	25	58	83	57.2
1929	42	32	74	40	36	76	150	36	57	93	62.0
1930	48	37	85	54	37	91	176	46	53	99	56.2
1931	93	56	149	48	31	79	228	75	66	141	61.8
1932	95	155	250	68	59	127	377	58	158	216	57.3
			1,373			684	1,857			869	

Note: From January 1, 1918, to January 1, 1933, 53.8 per cent of the total number of cases discharged were sterilized.

Unsatisfactory cases include transfers to mental hospitals, Pacific Colony (Home for Feeble-Minded), correctional schools, cases sentenced to penal institutions, those deported or residing outside the state, those not suitable for this institution, those who died on parole, and cases with irregularities of commitment or where the relatives are insistent upon discharge soon after admission.

TABLE 2.—Venereal Infections January 1, 1928, to January 1, 1933

		Infected Upon Admission		Infected Upon Return from Leave of Absence		Infected Upon Return from Escape	
		Lues	Gonorrhea	Lues	Gonorrhea	Lues	Gonorrhea
1928	{ Male	0	0	1	0	0	0
	{ Female	0	18	1	9	0	1
1929	{ Male	0	0	1	0	0	0
	{ Female	1	10	2	9	1	1
1930	{ Male	0	1	0	1	0	0
	{ Female	0	6	2	14	0	0
1931	{ Male	0	0	0	1	1	1
	{ Female	0	1	2	5	0	1
1932	{ Male	0	1	0	0	0	0
	{ Female	1	4	3	5	0	0
		2	41=43	12	44=56	2	4=6

Note: The new admissions during above period totaled 1,779. Those returned from leave and escape during above period totaled 3,446. The reason for the low number of infections upon admission is that we request all patients who possibly can be cared for on the outside be cleared up before admission. Infections upon return from leave of absence, in nearly every case, the girl was a sex delinquent before admission to the institution and many listed are reinfections of gonorrhea and are all returned for treatment as soon as found infected.

The question sometimes arises "Does sterilization increase venereal disease?" From Table 2, covering the past five years, you will note that we have had but comparatively few cases who contracted either gonorrhea or syphilis while on leave of absence or escape. Many of these were reinfections and were

sex delinquents before admission. While those returning infected are slightly more than those on admission, yet we have a definite policy in asking that all cases be cleared of infection before admission, while those on leave of absence we return to the institution immediately for treatment after either new or reinfection. Considering that out of 3,446 returns to the institution from leave of absence and escape there were but sixty-two, or 1.8 per cent, and of the admissions of 1,779 with but forty-three, or 2.42 per cent, infected, it is quite plain that venereal disease plays but a very little part and certainly disproves the theory that sterilization increases venereal infection. While only a slight difference, yet it shows the percentage of infections on admission and before sterilization is more than those returning to the institution for any reason following sterilization.

which were born before admission. It makes for a very happy home, although they are not able to have additional children. The vast majority, however, do appreciate and are glad they cannot have more children, realizing their inability to properly care for them. The great majority of the mentally deficient do well to support themselves, even under guidance, without the added responsibilities of having children to support.

Of those discharged during the past five years in satisfactory adjustment, unsatisfactory adjustment, sterilized group, and epileptic group, we

show in Table 3 their intelligence quotients, which ranges from 58.78 in the satisfactory group to 62.67 in the sterilized group, which is in the range of the middle moron.

These are the type that usually produce the most children, and naturally the vast majority of their offspring is defective. Our experience is quite conclusive that this type marry about their own mental level, and this kind of mating rarely brings forth anything but mentally deficient offspring, many of whom are lower mentally than either parent.

At the present time there are twenty-five states and four foreign countries with sterilization on their statutes. We are glad to report, however, that other states and countries are giving the matter very serious consideration. By the material aid of organizations, such as the Human Betterment Foundation[†] of Pasadena, headed by E. S. Gosney, philanthropist and founder, we are hopeful that such laws will get on the books of the remaining twenty-three states of the Union and all the civilized countries in the world. From our actual experience over many years, it would seem that everything points in favor of giving these individuals this protection against parenthood, and the longer we are in this work the more we advocate eugenic sterilization for the protection of society and the furtherance of human betterment.

L. L. STANLEY, M. D. (Medical Department of San Quentin Prison, San Quentin).—In theory the proper thing to do for the criminal is to sterilize him so that he will not reproduce his kind.

[†]Editor's Note.—Excerpts from a publication of the Human Betterment Foundation immediately follow this article.

TABLE 3.—Median I. Q. Discharges from January, 1928, to January, 1933

Intelligence Quotient	Satisfactory Adjustment	Unsatisfactory Adjustment	Sterilized Group	Epileptic Group
	F	F	F	F
130-139	0	1	0	0
120-129	0	0	0	0
110-119	0	4	1	1
100-109	3	13	5	16
90-99	30	14	20	6
80-89	81	55	73	27
70-79	164	73	148	23
60-69	258	145	255	32
50-59	209	156	221	35
40-49	120	89	113	31
30-39	35	38	24	14
20-29	30	33	6	9
10-19	18	14	2	7
0-9	11	13	0	4
N	959	648	868	205
N—Number				
F—Frequency				
Median				
Satisfactory				I. Q.
Unsatisfactory				62.2
Sterilized				58.78
Epileptic				62.67

But who and what is the criminal? Is he the man who, at the age of fifty-five, wrecks a bank, despoils a large utility company; the man at forty who passes fictitious checks in order to live without work; the youth of twenty who, at the point of a gun, commits a holdup to secure funds; or the man of any age who does someone to death for gain or in the heat of passion? He is all of these and more.

Would sterilizing these men reduce crime? It probably would not. The fifty-year banker has already produced his brood, as has the check passer, perhaps. The young robber would not be interested in offspring when he gets out of jail.

But 20 per cent of the state prisoners may be classified as feeble-minded. In these cases sterilization would be as beneficial as it has proved to be in the homes for the feeble-minded.

But the law does not provide for this procedure. California Statutes, 1913, page 775, Act 539, General Laws, provides as follows:

"Section 2. Whenever in the opinion of the resident physician of any state prison it will be beneficial and conducive to the benefit of the physical, mental or moral condition of any recidivist lawfully confined in such state prison, to be asexualized, then such physician shall call in consultation the general superintendent of state hospitals and the secretary of the State Board of Health, and they shall jointly examine into the particulars of the case with the said resident physician, and if in their opinion or the opinion of any two of them asexualization will be beneficial to such recidivist, they may perform the same; provided that such operation shall not be performed unless the recidivist has been committed to a state prison in this or some other state or country at least two times for rape, assault with intent to commit rape, or seduction, or at least three times for any other crime or crimes, and shall have given evidence while an inmate of a state prison in this state that he is a moral or sexual degenerate or pervert; and, provided, further, that in the case of convicts sentenced to state prison for life, who exhibit continued evidence of moral and sexual depravity, the right to asexualize them, as provided in this section, shall apply whether they shall have been inmates of a state prison in this or any other country or state more than one time or not; provided, further, that nothing in this act shall apply or refer to any voluntary patient confined or kept in any state hospital of this state."

It can be readily seen that this section is so encumbered with provisos that it cannot be used. At San Quentin, in the past twenty years no prisoner has been found to whom this law could be applied.

Section 645 of the Penal Code provides as follows:

"Whenever any person shall be adjudged guilty of carnal abuse of a female person under the age of ten years, the court may, in addition to such other punishment or confinement as may be imposed, direct an operation to be performed upon such person, for the prevention of procreation."

But in this statute the matter of constitutionality has been brought up. It is contended that vasectomy is unconstitutional in that an operation for the prevention of procreation is a cruel punishment, prohibited by an article of the state constitution which directs that "excessive bail shall not be required, excessive fines imposed, nor cruel punishment inflicted." Be that as it may, this statute has not been enforced in California. No operations for asexualization of criminals have been ordered or authorized at the State Prison in the past twenty years.

During this period, however, not more than ten prisoners have had vasectomy performed, all on their own written request. Their reasons for submitting have been various: the desire to prevent procreation of their kind; the wish to spare their wives of childbirth when freedom is obtained; and the hope that the operation might benefit their health. The latter consideration has been motivated by the reported benefits of the so-called Steinach operation. In this procedure the vas is cut. The end next to the testicle is crushed and tied. It is claimed that the seminiferous tubules atrophy by pressure and disuse. The interstitial cells, on the other hand, hypertrophy because of the extra blood supply which goes to them rather than to the spermogenetic cells. As the former cells are thought to influence the individual's vigor and vitality, their hypertrophy would increase these qualities.

The professional criminal is by no means a family man. The creation of offspring after he has served his imprisonment is rare and usually accidental.

What, therefore, might seem to be the proper thing to do in theory would probably not be of any great value in practice.

* * *

HUMAN STERILIZATION*

Strong, intelligent, useful families are becoming smaller and smaller. Irresponsible, diseased, defective parents, on the other hand, do not limit their families correspondingly. There can be but one result. That result is race degeneration.

The law of self-preservation is as necessary for a nation as for an individual.

When families that send a child to an institution for the feeble-minded average twice as large as families that send a child to the university, it is time for society to act.

What Can Be Done?—There is one outstanding, practical, humane measure which, properly administered, will go far to change this trend toward human deterioration.

This measure is the sterilization, by a harmless surgical operation, of men and women who are so seriously defective that, for the protection of themselves and their families, of society and of posterity, they should not bear and rear children.

This measure is not a novelty. It has back of it a whole generation of successful application. But, because of the lack of general knowledge concerning it, there still exists, even among edu-

* A publication of The Human Betterment Foundation, Suite 321, Pacific Southwest Building, Pasadena.

cated people, a great deal of misinformation and misunderstanding about it. Such ignorance is the main obstacle in the way of necessary extension of this humanitarian measure.

The purpose of this pamphlet is to tell briefly what eugenic sterilization is and what it is not; to describe the results to individual and community as demonstrated by a critical study of 6,000 operations, mostly in California, extending over a period of twenty years.

Not Punishment, But Protection.—Let this be fully understood at the outset: sterilization, as considered in these pages, removes no organs or tissues from the body, interferes with no blood or nerve supply, produces no physical change. It merely cuts and seals the tubes through which the germ cells—the spermatozoa and ova—must pass if conception is to result. *It does not in any degree unsex the individual*, except in making parenthood impossible. Such a result should be and, in the great majority of cases, is welcomed by the persons who are sterilized because it is performed only in cases where parenthood is manifestly undesirable from every point of view.

Sterilization is not a punishment, but a protection. It carries no stigma or humiliation. It is a humane measure designed to meet the best interest of all concerned, and for this purpose there is no known measure that can take its place. . . .

Patients Are Pleased.—The patients sterilized in the California institutions were found in six cases out of every seven to be satisfied with the operation and the results. The exceptions were only such as would be expected in a group of persons who had gone through severe mental illness. . . .

Homes Are Protected.—In no case has the operation broken up a home or disturbed a family relationship. On the contrary, case after case might be cited in which sterilization has been responsible for keeping a family together and allowing the patient to remain in his own home instead of spending the rest of his life in an institution. . . .

A canvas of the medical officers, probation officers, parole authorities, and social workers of the state who have had close observation of the workings of California's eugenic sterilization law disclosed that they are virtually unanimous in its support, holding it to be desirable in principle and satisfactory in practice. The criticism most frequently voiced by them is that it is not applied more widely. While nearly all of the feeble-minded are sterilized before release from state institutions in California, only one in twelve of the insane has been sterilized during the life of this law.

What Happens Afterward.—Careful follow-up of the feeble-minded patients paroled after sterilization shows that two-thirds of them have made good outside of the institution. Failures have been due to lack of intelligence or to temperamental defects, for the most part. . . .

The Need.—Experience everywhere demonstrates that the successful application of eugenic sterilization depends largely on an educated public

opinion and the conservative administration of sound laws.

The need for conservative, sympathetic, and discriminating use of such a measure in selected cases has been widely recognized as imperative since research began to bring forward more exact facts about the problem which confronts the American people.

Careful studies indicate that there are 6,000,000 in the United States who have been, are now, or at some time will be legally committed as insane to state institutions. The number who suffer from equal mental disease sufficient at some time to incapacitate them for work, but who are never legally declared insane, is about as great, making 10 per cent of the population or 12,000,000 persons subject to mental disease in one of its most serious forms.

But these 12,000,000 mentally diseased persons are not the whole story. There are 6,000,000 additional who, though not mentally diseased, are so deficient in intellect, with an endowment in this respect that is more than 30 per cent below the average, that they are often described as feeble-minded.

Such handicapped persons are subject to exploitation, likely to get into difficulties with law enforcement officers, and certain to contribute more than their quota to the ranks of delinquency and crime, and much more to those of dependency and pauperism. . . .

America's Burden.—This, then, is the situation which America faces now: 18,000,000 persons who are or at some time during life will be burdened by mental disease or mental defect, and in one way or another a charge and tax upon the rest of the population.

It challenges every thoughtful person. . . .

The Law in Twenty-Seven States.—Twenty-seven states in the Union now have eugenic sterilization laws on their statute books. They are as follows, with the year in which the first law was adopted:

Alabama	1923	Nebraska	1915
Arizona	1929	New Hampshire	1917
California	1909	North Carolina	1929
Connecticut	1909	North Dakota	1913
Delaware	1923	Oklahoma	1931
Idaho	1925	Oregon	1917
Indiana	1907	South Dakota	1917
Iowa	1911	Utah	1925
Kansas	1913	Vermont	1931
Maine	1925	Virginia	1924
Michigan	1913	Washington	1909
Minnesota	1925	West Virginia	1929
Mississippi	1928	Wisconsin	1913
Montana	1923		

Many of the states have made little use of these laws. This has been chiefly due to a lack of public education as to the need for such a measure; partly to the fact that some of the earlier laws were badly drawn and not easily workable. . . .

The Human Betterment Foundation, 321 Pacific Southwest Building, Pasadena, will gladly aid those interested in legislation, to get full information on this subject. It has published all the facts available, both historical and experimental, on eugenic sterilization, regardless of whether favorable or unfavorable to any individual's claims or expectations. It is concerned with education,

Operations for Eugenic Sterilization Performed in State Institutions Under State Laws Up to January 1, 1933

State	Male	Female	Total
Alabama	73	58	131
Arizona	10	10	20
California	4,423	4,081	8,504
Connecticut	18	320	338
Delaware	181	115	296
Idaho	4	9	13
Indiana	159	58	217
Iowa	56	38	94
Kansas	588	388	976
Maine	5	26	41
Michigan	264	819	1,083
Minnesota	72	621	693
Mississippi	1	11	12
Montana	33	48	81
Nebraska	94	125	229
New Hampshire	23	142	165
New York	1	41	42
North Carolina	10	36	46
North Dakota	56	37	93
Oklahoma	0	0	0
Oregon	296	586	882
South Dakota	55	84	139
Utah	44	41	85
Vermont	8	22	30
Virginia	479	854	1,333
Washington	6	24	30
West Virginia	0	1	1
Wisconsin	40	452	492
Total	6,999	9,067	16,066

Note.—The above figures are furnished by state authorities.

not with propaganda. It is not advocating any particular law for any particular state, but urging citizens everywhere to inform themselves and make up their own minds as to the issues involved; to adopt sound and workable laws and to amend those that are out of date or badly drawn.

* * *

VOLUNTARY STERILIZATION IN GERMANY

As times change, opinions change, and that applies also to medicine. In a recent letter (*The Journal of the American Medical Association*, August 27, 1932, p. 774) mention was made of a legal action in which the question of sterilization was involved. But now the medical syndical organizations of Germany—the Deutscher Aerztevereinsbund in association with the Hartmannbund—have petitioned the federal ministry of the interior to draft, at the earliest possible moment, a federal law permitting and regulating sterilization on eugenic grounds. Sterilization would of course always be contingent on the consent of the patient or his legal representative. The medical profession of Germany expressed itself as opposed to compulsory sterilization.

The subject of eugenics and sterilization is to be discussed at length at the next Deutscher Aerztetag (1933), after the preliminary work has been done.

According to existing laws, eugenic sterilization is punishable as unauthorized bodily injury. At first, an endeavor was made to have a paragraph inserted in the Penal Code that would provide for exceptions to the law. What is now desired is not an exception to the law, but that special legislation be enacted that will legalize, for

the public welfare, what has heretofore been prohibited.

Sterilization would be permitted only with the consent of the person concerned or the legal guardian, and then only in case a commission appointed by the chief authorities in each land shall give its approval. This commission would consist of a judge and two physicians, one of whom should be familiar with the "laws" affecting hereditary transmission in man. The decision of the commission would include the reasons for consenting to or refusing the sterilization. The written decision would be transmitted to the petitioner and a copy would be filed with a specially designated registrar. The physician who undertakes such an operation would also file with the registrar a short statement setting forth his reasons for the operation. Only a physician licensed to practice in Germany would be permitted to perform sterilization. The commission would impose no fees on the person to be sterilized. In the case of indigent persons, costs of the operation would be met by the welfare department. All persons having knowledge of the operation would be pledged to secrecy.

For eugenic sterilization, the persons to be considered are: those suffering from hereditary mental disease, mental weakness, epilepsy or any other hereditary disease, or who have morbid hereditary predispositions, if, according to the teachings of medical science, severe bodily or mental hereditary taints are extremely likely to develop in their offspring. The legislation will not consider the social indications for sterilization, as was feared by many, nor will it deal with the medical indications, which have to do with warding off a menace to life. Sterilization on the basis of recognized medical indications is permitted by the present Penal Code. The bill that is being proposed has to do with the welfare of the human race, whereas the social and the medical indications concern the welfare of individuals.

Humanity as a whole suffers constantly from the fact that the procreation of persons with sound hereditary characters is not sufficient to preserve its own numbers, whereas families with severe hereditary taints are propagated without check. It is difficult to restrict the propagation of persons with unsound hereditary characters. Such restriction is absolutely necessary for economic reasons; for the number of persons with serious hereditary taints, who become criminals or a burden to the public, is increasing. A diminishing number of persons capable of earning a living has to provide for an increasing number of economic incompetents. More than \$25,000,000 annually, and probably twice that sum, if everything is considered, is needed for institutional and welfare care of incompetents, whereas persons of sound body and mind suffer in large numbers for the lack of necessities of life. The prevention of propagation among incompetents by permanent segregation in institutions is economically impossible, so that no other way is left than the elimination of their procreative power.—Berlin *News Letter*. (*Journal of the American Medical Association*, Vol. 100, No. 13.)

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a copy of this leaflet.

EDITORIALS*

CALIFORNIA'S NEW CLINIC LAW

Title of California Clinic Bill.—In the Miscellaneous department of this number of CALIFORNIA AND WESTERN MEDICINE appear the opinion and interpretations of the Hon. U. S. Webb, Attorney General of the State of California, on certain phases of California's new clinic statute (Assembly Bill No. 1277, Chapter 765, approved by Governor James Rolph, Jr., June 5, 1933). The title of this measure reads as follows:

"An act defining clinics and dispensaries, providing for the operation, conduct, maintenance, examination and regulation thereof, requiring permits therefor, providing for the issuance and revocation of such permits by the State Board of Public Health, fixing the amount of and providing for the collection and disposition of annual fees for such permits, creating the clinic and dispensary fund, prescribing the powers and duties of the State Board of Public Health and of the Director of Public Health in reference to such clinics and dispensaries, and prescribing penalties for the violation of the provisions of this act."

* * *

State Board of Health to Supervise the Clinics.—When Governor Rolph signed this new statute, the Board of Public Health of California, at its first subsequent meeting, placed the item on its

* Editorials on subjects of scientific and clinical interest, contributed by members of the California Medical Association, are printed in the Editorial Comments column, which follows.

docket for consideration. Letters were also sent to members of the California Medical Association who had been especially interested in the passage of the measure, asking for suggestions regarding fees to be charged, and so on. It early became evident to the State Health Board that it was desirable to secure from the Attorney General an opinion on some of the provisions of the Act, concerning which differences of opinion in interpretation might easily arise. A letter formulating such queries was thereupon dispatched by the board; and the reply of the Attorney General is printed on page 214 of this issue.

* * *

State Attorney General Webb's Opinion.—A perusal of Attorney General Webb's opinion reveals how difficult it is to secure the enactment of laws in such simple and direct form that confusion and controversy do not come into question. It must be remembered that the Act as passed, owing to amendments, is quite different in parts from the original draft, as first drawn up by Dr. John Ruddock of Los Angeles and as submitted to the legislature through the California Medical Association Department of Public Relations.

This clinic law is something comparatively new and, like our medical practice acts in the stages of their beginning, may need considerable modification to make it elastically workable and fully practicable.

With the advice, however, which Attorney General Webb and his deputy, Lionel Browne, Esq., have submitted, it will now become possible for the State Board of Public Health to devise ways and means to put the Act into operation. But it is unfortunate that the licensing fee for all clinics is held to the minimum \$5, because this small sum will probably not be sufficient to create a fund through which the various provisions of the Act may be adequately carried out. Section 5 states:

" . . . All existing clinics and dispensaries as herein defined, other than those maintained, conducted and operated by the United States of America, or any department, official, or agency thereof, or clinics maintained by employers without profit for the sole benefit of their own employees, or research clinics working under nonprofit foundation registered with the United States government for tax exemption shall make written application as herein provided for such permit within ninety days from and after the date when this Act goes into effect. Application for permit must be made annually by every such person, firm or corporation maintaining, conducting and operating a clinic and dispensary other than the United States of America or any department, official or agency thereof, or clinics maintained by employers without profit for the sole benefit of their own employees, or research clinics working under nonprofit foundation registered with the United States Government for tax exemption."

* * *

When the Clinic Law Becomes Operative.—This Act, having been signed by Governor James Rolph, Jr., on June 5, by special legislative action, became a law on August 21, 1933. According to the provision in Section 5, just quoted, every clinic, other than those specified, must make written application for a license to operate within ninety days, or before December 5. The opinion

of the Attorney General on whether clinics must pay the \$5 license fee (which he states is the only fee that the State Health Board is legally authorized to demand) for the remaining time in the calendar year 1933 has not yet been received by the board. Whether the board can legally spend other state funds for postage, and print the necessary form blanks upon which clinics are required to make applications for licenses, is also a question still to be passed on. But in any event, the State Board of Health is willing and anxious to put the new law into force as promptly as possible, in so far as the California Department of Finance permits it to act, and to carry out the various provisions of the Act as fully as the moneys received will permit. If deficiencies exist in the new law, they can probably be rectified at the next session of the Legislature.

TWO PAPERS OF SPECIAL INTEREST

Blood Transfusion as Described by Elsholtz.—In the June CALIFORNIA AND WESTERN MEDICINE (page 432) was printed the first of a series of translations of the folio entitled "Clysmatica Nova" from the pen of Johann Sigismund Elsholtz (1632-1688). Elsholtz' work was printed in 1665. The last of the four articles, which are translations by Ethel Gladstone of the University of California Medical School Library, is printed in the Lure of Medical History department of our current number. Attention is called to this dissertation because of the pleasure to be derived from reading the viewpoints of Elsholtz as expressed by him almost three hundred years ago, and also because it is a good discipline for medical men at all times to be reminded of the studies of those who preceded them, and who, with far less of actual scientific and medical knowledge, were yet able to observe keenly, and to think and proceed clearly in their investigations. When physicians of the present generation take into consideration how comparatively recent is the general use of intravenous medication, and how bold seemed the advice for its general use, then the theory and application of intravenous medication, as brought out by Elsholtz in 1665, must indeed appeal as little less than courageous. Readers of CALIFORNIA AND WESTERN MEDICINE who do not avail themselves of the opportunity of reading Gladstone's translation of Elsholtz' almost forgotten work, are denying themselves a rare treat.

* * *

Human Sterilization.—Another very interesting paper in the current issue is the Bedside Medicine article on "Human Sterilization." The contribution of Doctor Butler of Sonoma State Home shows how much has been done by California in this method of treatment of human beings who are mentally defective. The excerpts from one of the publications of the Human Betterment Foundation, also a California institution, shed additional light on phases of this new work which, as time goes on, will probably be accepted more and more as proper treatment, materially aiding

the prevention of an overplus of defective citizens who, if not requiring institutional care calling for enormous sums of money, certainly add little that makes for a higher standard of human beings, either physically or mentally. The symposium and the appended data should provoke stimulating thought and additional discussion; for physicians, because of the nature of their profession, must have more than a passing interest in such matters.

PERSISTENT PROPAGANDA

A Newspaper Defense of Fellow's Dog-Pound Bill.—Some excellent criticisms of antivivisectionists and their methods were outlined by Chester Rowell, Esq., in the article reprinted in the May CALIFORNIA AND WESTERN MEDICINE (page 352). In the number for June (page 475) the legislative battle over Senate Bill No. 674 (Fellow) was described by Dr. Junius B. Harris of Sacramento in his report of the California Medical Association Committee on Public Policy and Legislation. Those presentations speak for themselves, and should appeal to all clear-thinking citizens.

The die-hard character of the antivivisectionists and their supporters, on the other hand, is brought into excellent relief by an editorial in the San Francisco *Examiner* of August 7, a perusal of which shows why an educational campaign is necessary if the propaganda that is seemingly based on mawkish sentimentalism over certain of the lower animals is to be properly counteracted. How and why a great metropolitan daily should give space to the editorial printed below, is something which members of the medical profession find most difficult to understand. The writer for the *Examiner* who penned these editorial paragraphs should read Chester Rowell's comments and then stop, look, listen, and think, before he again contributes a similar effusion to his newspaper. The article referred to, follows:

"DOG-BOOTLEGGING"

"By its failure to pass the Fellow Humane Pound Bill, the State Assembly at its recent session played directly into the hands of a new and atrocious racket.

"The measure was proposed by Senator Fellow to protect pet animals taken to the public pounds and to give their owners full opportunity to recover the impounded animals. One of its chief purposes was to prohibit the traffic in dogs as now practiced by 'dog-bootleggers.' These men, sometimes surreptitiously, sometimes in collusion with pound-masters, make a business of obtaining unclaimed dogs from pounds and selling them to research laboratories. The bill would have provided that such pet animals could not be sold under those circumstances.

"It is curious that Assemblyman Frank L. Crist of Santa Clara County, in which Stanford University is located, was the member who blocked the passage of the bill in the lower house by a parliamentary device. Whether Crist acted deliberately or not, he certainly played into the hands of the 'dog-bootleggers' racket, and his constituents should realize the result of his actions.

"Pet animals, at least, should be protected from this traffic by this humane pound measure. The bill had the support of all humane persons. That an Assemblyman in whose district is situated such a culture center as Stanford University should have been the means of halting its passage is difficult to understand."

EDITORIAL COMMENT*

ALLERGIC INACTIVATION OF DIPHTHERIA ANTITOXIN

VIII†

Nine years ago it was shown by Doctor Opie¹ that foreign proteins injected subcutaneously into homologously hypersensitive rabbits are precipitated or otherwise fixed in the local tissues, no appreciable absorption taking place into the blood stream. At the time, this was regarded merely as an interesting grammatical paradox, a local tissue hypersusceptibility functioning as a specific bodily defense. That this phenomenon is of direct clinical significance, however, is currently alleged by Doctor Kahn² of the University of Michigan, who found that, under certain conditions, local allergic fixation of diphtheria antitoxin completely prevents its specific therapeutic action.

Doctor Kahn's allergic studies were made on rabbits previously sensitized to horse proteins, with normal and heterologously sensitized rabbits as the controls. He found that 50 MLD of diphtheria toxin injected intracutaneously into half-grown rabbits invariably causes death in from two to four days. Simultaneous injection of 50 units of diphtheria antitoxin into another cutaneous area almost invariably prevents all demonstrable toxic action. The same antitoxin dose, however, injected into rabbits previously sensitized to horse protein is without this antitoxin effect. All allergic rabbits thus treated died as promptly as the untreated normal or heterologously sensitized controls, autopsies showing typical diphtheria toxin lesions of the adrenal glands.

Doctor Kahn believes that his study "throws light on conditions one frequently meets in children exposed to diphtheria who, after receiving diphtheria antitoxin for passive immunization, contract this disease some weeks later and are then given antitoxin intramuscularly. A severe local inflammatory response usually follows. The results . . . indicate that these children . . . do not derive any curative benefit from the antitoxin, since this reagent undoubtedly remains fixed at the point of injection."

Whether or not routine "desensitization" of his horse-protein-hypersensitive rabbits would render subsequent antitoxin injections therapeutically effective, has not yet been tested by Doctor Kahn.

Stanford University.

W. H. MANWARING,
Palo Alto.

* This department of CALIFORNIA AND WESTERN MEDICINE presents editorial comment by contributing members on items of medical progress, science and practice, and on topics from recent medical books or journals. An invitation is extended to all members of the California and Nevada Medical Associations to submit brief editorial discussions suitable for publication in this department. No presentation should be over five hundred words in length.

† Part I of this series was printed in the February CALIFORNIA AND WESTERN MEDICINE, page 116; Part II in March, page 188; Part III in April, page 275; Part IV in May, page 380; Part V in June, page 447; Part VI in July, page 59; Part VII in August, page 133.

1 Opie, E. L.: J. Exp. Med., 39:659, 1924.

2 Kahn, R. L.: Proc. Soc. Exper. Biol. and Med., 30:611 (Feb.), 1933.

THE LIMITED VALUE OF THE INFORMATION OBTAINED BY A BLOOD CALCIUM DETERMINATION

The note by G. F. Norman¹ in the May number of CALIFORNIA AND WESTERN MEDICINE offers an excellent illustration of the limited value of the total serum calcium determination alone in evaluating diseased states. Since the very limited usefulness of the serum calcium determination is not clearly understood by many physicians, it will be useful to briefly outline the essential facts involved.

In other publications² the authors have pointed out that the calcium of the blood serum exists in several chemical states. Two of these chemical fractions are separable by ultrafiltration into what is commonly termed the diffusible calcium and the nondiffusible calcium. Of these forms, only the calcium determined in the diffusible fraction is a measure of the physiologically available calcium for the control of neuromuscular irritability. The nondiffusible calcium, which is combined with the blood proteins, is quite inert in this respect. The level of the nondiffusible calcium and, therefore, also the level of the total calcium (the total calcium is the calcium ordinarily determined by the routine laboratory procedure) varies with the content of the serum proteins, more particularly the albumin. The level of the blood calcium then may be reduced because of hypoproteinemia. A noted illustration of this occurs in nephrosis, but a hypoproteinemia is by no means limited to this disease and is far more common than has hitherto been suspected. This is well brought out in a recent paper by Moschcovitz.³

Considering, therefore, the complexity of the states of the serum calcium, and the relation of the total calcium and particularly the variation of the nondiffusible calcium fraction with the level of the proteins, it becomes obvious that a simple analysis of the total blood calcium offers practically no information of value in suspect cases of hypocalcemic tetany. If the total blood calcium is slightly lowered, as in Norman's reported cases, it might be so due to a hypoproteinemia rather than to a tetanic phenomenon. If it is normal, it does not rule out the cause of neuromuscular hyperirritability.* To accurately determine the relationship of calcium to tetanic manifestations, it becomes necessary to either determine the level of the diffusible calcium directly or alternatively to rule out hypoproteinemia by a serum protein analysis along with the calcium determination.

From a knowledge of these pertinent facts certain deductions can be drawn regarding the significance of the blood calcium determination.

1. A total serum calcium analysis (normal variations 9.0 to 12.0 milligrams per cent) by itself

¹ Norman, G. F.: A Type of Migraine Associated with Hypocalcemia, Calif. and West. Med., 38:381 (May), 1933.

² The Diffusible Calcium of the Blood Stream. I to V. Arch. of Int. Med., 45:983 (June), 1930; 46:67, 72 (July), 1930; 47:660 (April), 1931; 50:855 (December), 1932.

³ Moschcovitz, E.: Hypoproteinemia, J. Am. Med. Assn., 100:1086 (April 8), 1933.

* The authors have shown that a diffusible calcium of 3.5 milligrams per cent or less is associated with clinical symptoms of active neuromuscular hyperirritability. This phenomenon can be present even when the total calcium is as high as 10.0 milligrams per cent. The lowered level of calcium in such an instance is reflected only in the diffusible calcium, which is very low.

is of no diagnostic value. *Do not order a total calcium analysis without a simultaneous determination of the serum proteins.* The calcium might be low due to hypoproteinemia.

2. *A lowered total calcium value, i. e., below 9.0 milligrams per cent accompanied by a lowered value for serum proteins* indicates a lowered calcium due to hypoproteinemia. This is present in such conditions as nephrosis, nephritis with protein loss, starvation, pregnancy, etc. The diffusible (and presumably the ionic) calcium fractions are, therefore, normal, and muscular hyperirritability due to hypocalcemia does not exist.

3. *A low serum calcium level with normal serum proteins* indicates a loss of diffusible calcium, and in such conditions neuromuscular hyperirritability may be attributed to a hypocalcemia.

4. *A normal value for serum proteins and calcium within normal limits* is presumptive evidence of a normal distribution of the calcium fraction and a calcium deficiency probably does not exist. However, if neuromuscular irritability exists, *determine the diffusible calcium if you want to be certain of the calcium deficiency. If the diffusible calcium is above 4.2 milligrams per cent, the hyperirritability cannot be attributed to a calcium deficiency.*[†]

We may state for the information of those interested in the chemical procedures that simple methods for the determination of the proteins in the blood and for the analysis of diffusible and nondiffusible calcium have been published by the authors.^{4,5} The chemical manipulation involved in these methods are within the capacity of the equipment of the average clinical laboratory.

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[†] Normal limits of diffusible calcium are 4.5 to 6.2 milligrams per cent. Latent tetany usually lies within the zone of 3.5 to 4.2 milligrams per cent, manifest tetany when the level is below 3.5 milligrams per cent.

⁴ Greenberg, D. M.: The Colorimetric Determination of the Serum Proteins, *J. Biol. Chem.*, 82:545, 1929. This protein method is also described in the current editions of Hawk and Bergel's Practical Physiological Chemistry and Peter and Van Slyke's Quantitative Clinical Chemistry.

⁵ Greenberg, D. M., and Gunther, L.: On the Determination of Diffusible and Nondiffusible Calcium, *J. Biol. Chem.*, 85:491, 1930.

Sufficiency of Complaint in Revocation Proceedings.—A sworn complaint was filed with the State Board of Medical Examiners of California, charging the defendant-physician with unprofessional conduct in that she aided and abetted a named unlicensed person to practice a system and mode of treating the sick and afflicted. After notice and hearing, the board found the charges proved and revoked her license to practice medicine. She sought to annul the action of the board by successive appeals to the Superior Court, City and County of San Francisco, and to the District Court of Appeal, First District, Division 1, California. The complaint on which she was tried by the board, the defendant contended, was legally insufficient because it failed to set forth the specific acts relied on as constituting aiding and abetting.

In California, said the District Court of Appeal, if the language of the statute on which an accusation filed with the board of medical examiners is based is sufficiently explicit to advise the person charged of the particular kind of unprofessional conduct of which he is accused, an accusation following that language is legally sufficient to confer jurisdiction on the board to hear and determine the matter. Section 14 of the Medical Practice Act (Stats. 1927, p. 99) authorizes the board to revoke certificates to practice for "unprofessional conduct." Various acts are named which are deemed to constitute "unprofessional conduct," among which is "... aiding or abetting any unlicensed person to practice any system or mode of treating the sick or afflicted." The accusation filed with the board follows the language of the statute and is sufficiently explicit to inform the person charged with the particular kind of unprofessional conduct of which he is accused. The words "aid" and "abet" are commonplace words, the meaning of which is well understood. Their legal definition is no different from their meaning in common parlance. The word "aid" means to assist, to supplement the efforts of another. "Abet" includes the elements of knowledge of the wrongful purpose of the perpetrator and counsel and encouragement of the illegal act.

The plaintiff relied apparently on *Dymet v. Board of Medical Examiners*, 57 Cal. App. 260, 207 Pac. 409, in which the accused was charged with having "procured by fraud and misrepresentation a certificate to practice medicine." The accusation in that case was held to be legally insufficient because the accusation did not set forth any of the facts relied on as constituting fraud and misrepresentation. But the word "fraud," said the District Court of Appeal, unlike the word "aid" and "abet," has no fixed, definite meaning. It is an inference of law to be drawn from facts and circumstances alleged and proved. It can and does assume so many shapes that courts and authors have been cautious in attempting to define it. Each case in which fraud is claimed to be involved must be considered under its own facts. An allegation of fraud in general terms presents no issuable fact. The facts constituting the fraud must be pleaded with particularity. No such difficulty, however, presents itself in accusing one of aiding and abetting a named unlicensed person to practice.

For the reasons stated, the order of the board revoking the physician's license to practice was affirmed. (*Anderson v. Board of Medical Examiners* (Cal.), 3 P. (2d) 344.)—*Journal of the American Medical Association*, Vol. 99, No. 3.

Resuscitation of the New-Born.—Brown divides the degrees of asphyxia in the new-born into three types: (1) The depressed child, who breathes occasionally in gasps, resists movements of the head and the extremities, and as a rule reacts to any form of stimulation, responds usually to the spanking-tubbing technique and promptly and vigorously to inhalations of oxygen-carbon dioxid mixtures administered by a face mask. (2) The asphyxiated baby, whose respiration occurs at long intervals and only following external stimulation, whose muscles are relaxed and who offers no resistance to the opening of the mouth, should immediately be examined with a laryngoscope and the pharynx aspirated. If no reflex irritation is induced by this aspiration, the glottis should be intubated under direct vision and the trachea aspirated. The reflex tone of the glottis is the best indication of the child's viability. (3) If there is no reflex spasm of the glottis, the baby is dying. Such a baby demands immediate and full oxygenation and the stimulating effects of carbon dioxid. Through a tube into the trachea, oxygen-carbon dioxid mixtures must be delivered under measured pressure. Such pressure overcomes atelectasis and allows an immediate diffusion of the oxygen-carbon dioxid mixture, which relieves the right heart pressure, increases the left heart circulation, and throws the necessary stimulation into the depressed respiratory center.—*Canadian Medical Journal*.

C. M. A. DEPARTMENT OF PUBLIC RELATIONS

An open forum for progress notes on the department's activities, and for brief discussions on medical economics. Correspondence and suggestions invited. Address Walter M. Dickie, Room 2039, Four Fifty Sutter Street, San Francisco. This column is conducted by the Director of the Department.

Regulations of the Riverside County Medical Commission Adopted by the County Board of Supervisors Relative to the Medical Care of Indigent and Part-Pay Patients.

A commission has been appointed by the Riverside County Medical Society to formulate rules and regulations relative to the care of indigent and part-pay patients. The Board of Supervisors has appropriated funds for the employment of a social service worker and has given authorization to the Commission to establish such social service department. The following is a copy of the regulations governing both classes of patients:

I. REGULATIONS OF THE RIVERSIDE COUNTY MEDICAL COMMISSION RELATIVE TO INDIGENT PATIENTS

1. Members of the staff agree to care for such patients as are assigned to them and assume the same, but no more, responsibilities than for their own private patients.
2. Patients may designate the physician of their choice from the staff members.
3. If no preference is expressed or if the physician chosen is not available, a member shall be assigned in rotation from an alphabetical list.
4. Staff members shall be listed according to the following specialties. A member may register under one or more specialties: general medicine; general surgery; obstetrics and gynecology; eye, ear, nose and throat; urology; pediatrics; radiology; dermatology.
5. Changes in staff membership must be made through the Commission.
6. Differences among staff members and between them and the Social Service Department shall be referred to the Commission.
7. Patients may be cared for at the doctor's office or at the patient's home or may be referred to the county clinic or the county hospital for treatment at the doctor's option.
8. Except in an obvious emergency, hospitalization of patients must be done through the Social Service Department.
9. The cost of drugs: Dressings and necessary supplies shall be borne by the patient of the county through satisfactory regulations between the Social Service Department and the druggists.
10. Simple records: Transfer and discharge notices must be kept.

II. REGULATIONS OF THE RIVERSIDE COUNTY MEDICAL COMMISSION RELATIVE TO PART-PAY PATIENTS

1. Members of the staff agree to care for such patients as are assigned to them and assume the same, but no more, responsibilities than for their own private patients.
2. Patients may designate the physician of their choice from the staff members.
3. If no preference is expressed or if the physician chosen is not available, a member shall be assigned in rotation from an alphabetical list.
4. Staff members shall be listed according to the following specialties. A member may register under one or more specialties: general medicine; general surgery; obstetrics and gynecology; eye, ear, nose and throat; urology; pediatrics; radiology; dermatology.
5. Members of staff will charge such fees as are fixed by the classification established by the Medical Social Service Department.

6. Changes in staff membership must be made through the Commission.

7. Differences among staff members and between them and the Social Service Department shall be referred to the Commission.

8. Part-pay patients may be cared for at the doctor's office or at the patient's home or at the county hospital.

9. Except in an obvious emergency, hospitalization of patients must be done through the Social Service Department.

10. The cost of drugs: Dressings and necessary supplies shall be borne by the patient or the county through satisfactory regulations between the Social Service Department and the druggists.

11. Simple records: Transfer and discharge notices must be kept.

12. Part-pay service must be on a cash basis, the prescription fee being paid at each visit.

* * *

Federal Funds in Welfare Relief Work

Federal funds are being contributed to the various local communities to be used in conjunction with the state and county funds, for the purposes of welfare relief. It is permissible to use these funds for the furnishing of medical care in the home. Both San Francisco and Los Angeles County Medical Associations are submitting suggestions to the local relief commissions whereby medical service may expediently be supplied. An outline of the plan suggested by the Los Angeles County Medical Association is as follows:

OUTLINE OF PLAN OF THE LOS ANGELES COUNTY MEDICAL ASSOCIATION

Suggested by the Los Angeles County Medical Association for the medical care of indigents through the committee in charge of the federal and local relief fund.

Those Eligible for Care.—All those who are receiving or who are about to receive relief other than medical care through the committee in charge of this fund are eligible to receive medical care.

Definition of Medical Care.—This service shall be available for the acutely ill in their homes or at such places as designated by the committee, and under conditions as defined below.

Those Ineligible for Care.—If on the first or subsequent visit of the physician it is apparent that the malady is such as to require hospitalization, medical attendance under this plan shall be discontinued as soon as hospital care can be arranged.

Method of Securing Care.—After careful consideration, the Public Relations Committee of the Los Angeles County Medical Association feels that the best and most adequate medical service through the committee in charge of the federal and local relief fund would be rendered by the family physician, if there be one and if he be willing to comply with the requirements laid down by the committee in charge of the fund. If the family physician be unwilling or unable to respond to the call, another physician may be called from the list supplied by the County Medical Association.

The County Medical Association maintains a telephone exchange that is open twenty-four hours of the day and through which, by calling Vandyke 1221,

any and all of the physicians, members of the County Medical Association, can be reached.

It is suggested that the County Medical Association will supply to its telephone exchange, lists of all doctors who have agreed to serve under this plan and who have agreed to meet all of its requirements; these lists to be arranged according to fixed geographical divisions of the county. (As most calls will come during the office hours of the physician, it would appear essential that these lists be grouped according to the addresses of the offices of the physicians. A great amount of preliminary clerical work can be avoided if the present grouping of members of the County Medical Association be accepted for this work. These are now grouped as follows: the city of Los Angeles is divided into ten major districts; the physicians in the county of Los Angeles are arranged in sixty-six major communities. Lists of physicians in these groupings could be made immediately available for the telephone exchange.)

The County Medical Association agrees to communicate at once with its entire membership of approximately 2,000 doctors of medicine, inviting all of them to cooperate in rendering this service, and zoned according to the above program, or according to a zoning system agreeable to the committee in charge of the federal and local relief fund.

Whenever an individual who is entitled to medical relief desires medical service, he or she shall apply to the proper office arranged by the committee in charge of the fund, where he shall be given authorization for the receipt of medical service. The family physician, if there be one, shall then be called; or if there is no family physician or the family physician is not available for such service, another physician on the zone list shall be called through the County Medical Association exchange, Vandyke 1221. In calling these physicians, names shall be used in rotation. Such authorization for medical service shall be limited to such rules and regulations as may be set by the federal relief fund committee.

Payment for Visits.—It is suggested that when a physician on the list of those available for this service be called to the home of a patient, aside from night calls, that he be compensated as follows: \$2 for the visit and \$1 for each additional member of the family at that address who may have been authorized as entitled for medical care at the time. His compensation for night calls is suggested as \$4. (Experience shows that night calls are very seldom necessary.) Only calls received from the district headquarters, as established by the committee in charge of this fund and transmitted through the Los Angeles County Medical Association exchange, will be recognized by the physician as valid.

Ambulant cases may be authorized by the central bureau or whatever organization for this purpose is set up by the committee in charge of the fund, and these patients will be accepted by physicians listed for such service at their offices, the physicians to be compensated at the rate of \$1 per visit.

The lists of these available physicians will be kept on file at the district headquarters or central bureau. The physician, when the patient calls upon him, will collect from the patient a card or other document showing that the patient is entitled to such service and the patient shall sign this card or other document, indicating that he has received such service.

X-ray, laboratory work, etc., which require expenditures on the part of the physician, shall require special authorization from the district headquarters or central bureau, and the physician shall be compensated accordingly for such expenditures.

Supervision by the County Medical Association.—The County Medical Association will furnish lists of physicians available for this service in the various zones that may be needed. (Note: If the zoning of physicians as now maintained by the County Medical Association be followed, a great deal of clerical work can be eliminated and lists can be made available in a very short time.)

The County Medical Association offers the use of its Public Relations Committee and Department as a consultation group to which the committee in charge of the fund may refer all cases of disagreement relative to medical service.

Forms.—Whatever forms may be necessary for the control and working out of this plan will be agreeable to the County Medical Association, and all physicians who are invited to render service under this plan must be agreeable to whatever system relating to forms that the committee in charge of this fund may designate.

The County Medical Association agrees, as a further check on these forms, that completed authorization slips bearing physicians' signatures may be forwarded to the office of the secretary of the County Medical Association at stated intervals for verification of the physicians' signatures.

Malpractice—Homeopathic Physician as Expert Witness Concerning Nonsectarian Surgical Standards.—The defendant, an "allopathic" physician, was sued for damages for malpractice in removing a cyst. Over the defendant's objection, a homeopathic physician was permitted to testify as to the defendant's care and skill. A witness, said the Supreme Court of California, on appeal, may testify as an expert if he discloses knowledge of the subject sufficient to entitle his opinion to go to the jury. No rule of law prevails in California precluding a physician trained in one school of medicine from testifying as to the treatment rendered by a physician trained in a different school. Such a rule might be promulgated if the charge of malpractice was based on some special course of treatment to be tested by the general doctrine of a particular school. Such a rule is not applicable, however, to a case in which the alleged malpractice is based on general charges of negligence with respect to matters of almost common observation within the experience of every physician. All schools of medicine require their adherents to exercise care in surgical work to insure cleanliness, proper sterilization of instruments, treatment of wounds after operation, and precautionary measures to prevent infection. In the opinion of the Supreme Court, the homeopathic witness in this case was fully qualified to testify as to the propriety of every act of negligence alleged to have been committed by the defendant. (*Hutter v. Hommel* (Calif.), 3 P. (2d) 554.) —*Journal of the American Medical Association*, Vol. 99, No. 3.

Tragedies of the Fourth.—One hundred and seventy persons lost their lives in the United States through celebrating the "Glorious Fourth" not wisely, but too well, according to the best available newspaper compilations. Ten of these, or one-seventeenth, were in Ohio, which has about one-eighteenth of the total population and (an interesting if unimportant coincidence) was the seventeenth state to be admitted to the Union.

Automobile and crossing accidents took the heaviest toll. In Michigan alone twenty-three persons died as the result of automobile wrecks; sixteen in California, and eight in Ohio. Two other persons drowned in this state; but there was no death from fireworks, although several children and one man were seriously injured. The man probably will lose the sight of both eyes as the result of delayed explosion of an aerial bomb. A firecracker caused a \$3,000 warehouse fire in Cleveland.

New York hospitals treated 1,000 persons for fireworks burns; but few were serious. More than 100 fireworks accidents were reported from Chicago; eastern Pennsylvania had forty-six, of which three were fatal, and ninety-six persons were burned in southern New Jersey.

Columbus had only two reported accidents of this class, neither serious, and no one, so far as official reports show, was injured in a traffic mishap.—*Ohio Health News*.

STATE MEDICAL ASSOCIATIONS

This department contains official notices, reports of county society proceedings and other information having to do with the state associations and their component county societies. The copy for the department is edited by the state association secretaries, to whom communications for this department should be sent. Rosters of state association officers and committees and of component county societies and affiliated organizations, are printed in the directories noted under Miscellaneous on the front cover index.

CALIFORNIA MEDICAL ASSOCIATION

GEORGE G. REINLE.....President
CLARENCE G. TOLAND.....President-Elect
EMMA W. POPE.....Secretary-Treasurer

OFFICIAL NOTICES

Placement Bureau Notice—Medical Officers Needed in Civilian Conservation Corps for Immediate Service.—Medical officers who are now members of the Officers' Reserve Corps, not above the grade of captain and who desire six months' service with the Civilian Conservation Corps, communicate with Commanding General, First Reserve Area, Presidio in San Francisco, California. * * *

Medical officers not over 35 years of age who are not members of the Officers' Reserve Corps and who desire such duty may be commissioned in the Officers' Reserve Corps and then detailed for such duty. Communicate with Commanding General, First Reserve Area, Presidio of San Francisco, California.

* * *

The fall meeting of the Council of the California Medical Association will be held in Los Angeles, September 30, 1933.

* * *

Application for Place on Annual Program.—Members who desire to present papers before the 1934 annual session, which will be held at Riverside, should write to the secretary of the section before which the particular subject should be presented.

Names and addresses of section officers are regularly published on advertising page 4 of each issue of CALIFORNIA AND WESTERN MEDICINE.

When requesting place on the program, a brief résumé of the paper should accompany the application.

* * *

Extension Lecture-Service.—Any member who has a subject of medical interest to members and who is willing to go on call to the various county medical societies of the state, may furnish before September 20 his name and the titles of not more than three addresses. Address the California Medical Association, 2004 Four Fifty Sutter, San Francisco.

Those who enroll for this gratuitous service many times receive calls at inopportune moments, but that the service compensates is evidenced by the infrequency of the requests for release.

As this list of Extension speakers and subjects will be published in the October issue of CALIFORNIA AND WESTERN MEDICINE, it is necessary that replies to this notice be received not later than September 20.

COMPONENT COUNTY MEDICAL SOCIETIES

SACRAMENTO COUNTY

A regular meeting of the Sacramento Society for Medical Improvement was held at the Elks' Temple on May 16, 1933. In the absence of the president, Dr. George Briggs, the vice-president, Dr. Oscar Johnson, called the meeting to order at 8:30 p. m. Fifty-six members and guests were present.

The minutes of the last regular meeting were read and approved.

Dr. Burt Howard reported a case which presented many diagnostic difficulties. It appeared, at first, to be an aneurism of the descending portion of the arch of

the aorta. It proved later to be an endothelioma of the chest.

The first paper of the evening was a most interesting and timely discussion of the surgery of the intra-abdominal hollow viscera, by Dr. Edmund Butler of San Francisco. His paper dealt entirely with the treatment of injury to abdominal viscera. He stressed the importance of early diagnosis, and pointed out that diagnosis early is often very difficult. The symptoms and signs of various injuries were discussed and methods of treatment outlined. His paper was well illustrated by lantern slides.

Subphrenic Abscess was the title of the second paper of the evening, and was read by Howard W. Stephens, M.D., of San Francisco. He described the anatomy of the subphrenic spaces and outlined the etiology of subphrenic abscess. He discussed the symptoms, signs and diagnosis of subphrenic abscesses, and pointed out that they were all secondary to some other infection. Knowledge of this primary infection was important in diagnosis and proper treatment. In operations on the abdominal viscera, Doctor Stephens pointed out the importance of prophylaxis in preventing the development of subphrenic abscesses. He brought his paper to a close by describing surgical procedures for the treatment of subphrenic abscesses.

Appreciation for the papers was voiced by Doctors Leo Farrell, Frank MacDonald and Lindsay.

The application of Doctor Fabian was read for the first time.

The application of Doctor Hirsch was read for the second time and he was admitted to membership in the Sacramento Society for Medical Improvement.

Following the report of the Board of Directors, Dr. Fred Scatena moved that the next regular meeting of the Sacramento Society for Medical Improvement be set aside for the purpose of certifying nominees for the Sacramento County Health and Welfare Board. The motion was seconded and passed. Dr. Philip Young moved that the chair appoint a nominating committee which would present the names of four men who had expressed their willingness to serve on the Sacramento County Health and Welfare Board; these names to be voted upon at the next regular meeting. The motion, being seconded, was voted by secret ballot and lost. Dr. Edward Babcock discussed the examination of preschool children as carried on at present in Sacramento, and made a plea that something be done to correct evils associated with such practice. Dr. William Beattie moved that the Sacramento Society for Medical Improvement go on record as opposed to the examination of preschool children as conducted at present, and that the matter be referred to the public relations committee. The motion, after being duly seconded, was voted upon and passed.

Dr. Nathan Hale gave an interesting report of the last annual convention of the California Medical Association held at Del Monte. Doctor Hale's report was accepted.

There being no further business, the meeting adjourned.

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G. W. LEE, Secretary.

VENTURA COUNTY

The June meeting of the Ventura County Medical Society was held in the clinic building of the Ventura County Hospital on June 13, Dr. Artemas Strong presiding.

Members present were: Doctors Homer, Strong, Drace, Achenbach, Moser, Coffey, W. S. Clark, Jones, Shore, Illick, Armitstead, and Felberbaum. Guests

were: Doctors Zeiler, Tolefson and Meland of Los Angeles, and Doctors Ullmann, Evans, Finley, Rich, Bradford, Crawford, Covault, and Gronhove.

The scientific program preceded the business meeting.

Doctor Achenbach introduced Doctor Zeiler, a member of the California Cancer Commission, as the speaker of the evening. Doctor Zeiler opened the evening with the subject of malignancies, and then introduced Doctor Tolefson, who gave a paper on *Pelvic Malignancies*. Discussion by Doctor Meland followed, and Doctors Ullmann and Evans of Santa Barbara closed the discussion.

In the business meeting that followed, after the usual reading and adoption of minutes, applications for membership of Doctors Beach and Hainsworth were presented and balloted upon. Both were elected members of the Ventura County Medical Society.

WILLIAM FELBERBAUM, *Secretary*.

CHANGES IN MEMBERSHIP

New Members (46)

Alameda County.—Evelyn Reynolds Ott, Wallace T. Partch.

Butte County.—John Huffman White.

Fresno County.—Roy Earl Allen.

Humboldt County.—Samuel Pink Burre.

Imperial County.—Karl H. Korthauer, Iner Sheld Ritchie.

Los Angeles County.

Ward Clair Alden
Ted A. Butzin
Lester Jankay Dutch
Roy Emmett Flesher
Charles Allison Foulks
Verne Gordon Ghormley
Benjamin Goldberg
William Leighton Griffin
Wesley Robert Heard
Harold R. Hennessy
Alfred G. Huenergardt
Ralph Wilson Hulet
Harold Stephen Johnson
Samuel Wesley Kime
Frederic W. Kuhlmann

John P. Mortensen
Bernard Paul Mundall
Esther Serida Nelson
R. B. Raney
Lyman Harold Robison
Carl John Shaffer
Roy F. Sheldon
Leo D. Smith
Alonzo D. Snyder
Arthur G. Tullar
H. Milton Van Dyke
Francis P. Weston
Dwight Dunham Young
Maurice Leon Young

Merced County.—Edwin Morris Soderstrom.

San Bernardino County.—Robert I. Hodgins

San Diego County.—James Norman O'Neill, Harold W. Pfeiffer, Floyd Lawrence Wergeland.

San Francisco County.—James B. Herring, LaVerne Wright.

Ventura County.—Ellarine L. Hainsworth.

Yolo-Colusa-Glenn County.—Milford B. Bransford, William Henry Walker.

Transferred (3)

Mathew E. Hazeltine, from San Francisco to Marin County.

James F. McAnally, from Sacramento to Placer County.

Carl H. Talmage, from Los Angeles to Napa County.

In Memoriam

Brier, Isabel Presbrey. Died in Livermore, July 7, 1933, age 34 years. Graduate of the University of California Medical School, San Francisco, 1926. Licensed in California, 1926. Doctor Brier was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

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Carroll, John Joseph. Died in San Francisco, July 21, 1933, age 37 years. Graduate of the Creighton University School of Medicine, Omaha, 1919. Licensed in California, 1924. Doctor Carroll was a member of

the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

✦

Edelman, David William. Died in Los Angeles, August 6, 1933, age 64 years. Graduate of the New York University Medical College, New York, 1891. Licensed in California, 1892. Doctor Edelman was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

✦

Jennings, George Darwin. Died June 6, 1933, age 61 years. Graduate of the Northwestern University Medical School, Chicago, 1899. Licensed in California, 1900. Doctor Jennings was a retired member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✦

Lessard, Mark Davis. Died in San Francisco, August 1, 1933, age 52 years. Graduate of University of California Medical School, San Francisco, 1923. Licensed in California, 1923. Doctor Lessard was a member of the San Mateo County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

✦

Lyster, Theodore Charles. Died in Los Angeles, August 6, 1933, age 58 years. Graduate of the University of Michigan Medical School, Ann Arbor, 1899. Licensed in California, 1920. Doctor Lyster was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✦

Martineau, Allen Sherman. Died in San Diego, July 29, 1933, age 36 years. Graduate of the University of Pennsylvania School of Medicine, Philadelphia, 1925. Licensed in California, 1927. Doctor Martineau was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✦

Shanks, Frederick Hastings. Died in San Francisco, July 28, 1933, age 64 years. Graduate of the Jefferson Medical College of Philadelphia, 1891. Licensed in California, 1891. Doctor Shanks was a member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

OBITUARIES

Bradford Woodbridge

1863-1933

Death has not been kind to the practicing physicians of Placer County. In the past thirteen months six physicians have answered the last call. Five of these were members of the Placer County Medical Society. Four of them had practiced fifty years or more. The combined years of practice of these four was 212 years. Two of them had helped organize the Placer County Medical Society in 1889. Three of them were past presidents of the Placer County Medical Society, and two others had served this society as secretary.

The latest to leave us was Dr. Bradford Woodbridge of Roseville, who died August 17.

Doctor Woodbridge was a graduate of Cooper Medical College in the class of 1883 and had practiced in Placer County since 1896, first at Rocklin and later at Roseville. Doctor Woodbridge was a member of the Placer County Medical Society since its reorganization in 1903. For two years he was president of the society.

Doctor Woodbridge was one of the most prominent citizens of Placer County—a capable, beloved physician, a public-spirited citizen, a kind and devoted husband and father. He will be missed by the entire medical profession and by a host of friends.

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Theodore Charles Lyster
1875-1933

The sudden death of Dr. Theodore Charles Lyster on August 5, 1933, brought sorrow to a great circle of associates and friends. That he had been at his usual work up to the moment of death but served to accentuate their feelings of untimely loss, the magnitude of which will come to be realized only with the passage of time.

In Doctor Lyster, virile enthusiasm, infectious loyalty and irresistible friendliness were welded into a magnetic personality. All who knew him felt the charm of his happy combination of dynamic ability and sympathetic understanding; he had the rare gift of being able to infuse into others his own selfless effort and peculiar effectiveness. Mere coincidence does not suffice to account for the frequent selection of Doctor Lyster when difficulty arose or a problem had to be solved; each task discharged stands as a milestone marking some special service in the course of his useful life. Reflections of him are mirrored in the hearts of associates and patients. One friend has written: "Probably everyone who came in contact with him liked him; which would not necessarily mean much were it not that he had the high character and mental ability to back up what in others might have seemed an artificial amiability." Another, "He knew how I felt about him. I could never get it into words, although I often tried. He'd just laugh, put his arms around me and pat me. He gave me a beautiful world of light and color and action. His example gave me an attitude with which to face reality—not lightly, but joyously, thankfully. Greatest of all, he made me feel from his height, that he believed in me . . . the healing strength of his hands and the radiance of his smile are with me now and always. . . . I send you not sympathy but my grateful realization of our comradeship in memory and devotion."

Doctor Lyster was interested in many local, state and national affairs. He played an active part in reorganizing the Army Medical Service following the Spanish-American War; in the reconstructive sanitation of Cuba, Panama, and the Philippines; in the evolution of the Army Medical School; he initiated and directed the Air Medical Service, and the eye and ear departments of the Surgeon-General's office.

On the death of Doctor Gorgas, Doctor Lyster carried to a successful conclusion the work of the Rockefeller Foundation against yellow fever in Mexico and Central America. He served as medical examiner for the Department of Commerce from the beginning of its organization to issue licenses to commercial aviators. Largely by reason of his persistent efforts has it been possible to work out a practical plan whereby the Los Angeles County Medical Association took over as a nucleus for its own library the Barlow Medical Library, of which Doctor Lyster had been one of the trustees and president. He was ex-president of the Southern California Medical Association and was an active member of the California State Society, Los Angeles Clinical and Pathological Society, the American Laryngologic, Rhinologic and Otologic Society, and the American Ophthalmological Society. He was a member of the Westport Beach Club and the California Club.

Committee: ISAAC H. JONES, *Chairman*
WILLIAM DUFFIELD
LAWRENCE K. GUNDRUM
EUGENE R. LEWIS

The Tax Dollar and Health.—Your tax dollar! How much of that hard-earned dollar do you think is spent to protect your most priceless possession—health!—and that of your family at home? asked Dr.

Fred O. Toney in introducing a recent broadcast sponsored by the American Public Health Association, over the National Broadcasting System. Proceeding to answer his own question, some, he remarked, have said, "maybe half," evidently judging from their own ideas of the value of health protection to themselves personally, as compared with the other primary services.

Ohioans should be able to digest Doctor Toney's facts and figures with profit; for they confirm, from the national field, the facts and figures that the Director of Health, Dr. H. G. Southard, has been driving home in this state, ever since the era of economic stress became operative. The national figures, as deduced by Doctor Toney differ from the Ohio figures, as presented by Doctor Southard, only in showing that Ohio has paid more per capita for fire and police protection than the national average, and minutely less for health protection.

Reverting to the individual guesses as to cost of health protection, they are wrong, according to Doctor Toney. Only an infinitesimal fraction of 1 per cent of that tax dollar is spent for safeguarding health in the United States. To put it another way, the average expenditure for health protection in the United States during prosperous times is only the small sum of one dollar a person a year; and of this, only half, or 50 cents, comes from taxes. The rest is from voluntary gifts and contributions. In the country towns and rural areas, only from 25 to 50 cents a person a year is spent to prevent unnecessary sickness and deaths.

For this small outlay for health the citizens have been receiving: (1) protection of child life and motherhood, to keep down the death rates of those most dear to us; (2) suppression of contagion, mostly the diseases of childhood; (3) maintenance of public health laboratories for detection of epidemic disease; (4) recording of births and deaths, which guides the health army to the most effective point of attack; (5) sanitary supervision of human wastes to prevent pollution of water and milk supplies, also to control vermin and insects as spreaders of disease.

Surprising results have accrued from this small expenditure. Death rates and sickness rates have been falling steadily in the United States, especially during the last decade. Infant deaths, child deaths, typhoid fever deaths, smallpox deaths, tuberculosis and diphtheria deaths, and general death rates everywhere, have been falling, falling under the influence of that tiny expenditure of less than 1 per cent of the tax dollar, used to render effective the scientific knowledge of how to prevent sickness and death.

Now, the American Public Health Association approaches the national farm and home listeners, everywhere in the land, with a brief and very simple plea. That plea is, "support your local health officer, in his effort to maintain the barest essentials of health protection in your community—against the unfortunate tendency now everywhere apparent, to cut health services more—often much more—than the other services of government."

Police protection! Four dollars and fifty-two cents a person, a year. It's important, of course, nobody disputes that. But *is* it more important than health? Should health protection be curtailed more than police protection?

Fire protection! Three dollars and thirty-two cents a person, a year. Again, an important public service, but touching property more than lives, in the last analysis. Is it more important than health?

Schools! Sixteen dollars and seventeen cents a person, a year. Is education of more consequence to us than the lives and health of the mothers and children?

Common sense and sound judgment, we believe, should be applied to this most confusing problem of curtailment of public budgets. Health service should, perhaps, be cut—here and there—in such desperate economic times as these, even though already insufficient as it is. But should health protection be cut proportionately more than police protection? Or fire protection? Or education?—those other essential services of government. That, you citizens must decide.—*Ohio Health News.*

MISCELLANY

Under this department are ordinarily grouped: News; Medical Economics; Correspondence; Twenty-five Years Ago column; Department of Public Health; California Board of Medical Examiners; and other columns as occasion may warrant. Items for the News column must be furnished by the fifteenth of the preceding month. For Book Reviews, see index on the front cover, under Miscellany.

NEWS

Coming Meetings.

California Medical Association, Riverside, California, April 30 to May 2, 1934. Emma W. Pope, M. D., Secretary, 2004 Four Fifty Sutter, San Francisco.

Nevada State Medical Association, Las Vegas, Nevada, September 29 to 30, 1933. Horace J. Brown, M. D., Secretary, Medico-Dental Building, Reno.

Pacific Coast Society of Obstetrics and Gynecology, Portland, Oregon, October 19 to 20, 1933. Clarence A. De Puy, M. D., Secretary, 230 Grand Avenue, Oakland.

Utah State Medical Association, Salt Lake City, September 14 to 16, 1933. L. R. Cowan, M. D., Secretary, 305 Medical Arts Building, Salt Lake City.

Medical Broadcasts.*

American Medical Association Health Talks.—The American Medical Association broadcasts on Tuesday and Thursday from 9:15 to 9:20 a. m., Chicago daylight saving time, which is one hour faster than central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

There is also a fifteen-minute talk, sponsored by the association, on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

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San Francisco County Medical Society.—The San Francisco County Medical Society broadcasts every Tuesday from Station KFRC, 4 to 4:15 p. m., and over Station KJBS from 11:15 to 11:30 a. m.

* * *

Los Angeles County Medical Association.—The radio broadcast program for the Los Angeles County Medical Association for the month of September is as follows:

Tuesday, September 5—KFI, 10 to 10:15 a. m. and KECA, 9:30 to 9:45 a. m. Subject, Snake Bites.

Tuesday, September 12—KFI, 10 to 10:15 a. m. and KECA, 9:30 to 9:45 a. m. Subject, What Price Health?

Tuesday, September 19—KFI, 10 to 10:15 a. m. and KECA, 9:30 to 9:45 a. m. Subject, Some Pertinent Don'ts.

Tuesday, September 26—KFI, 10 to 10:15 a. m. and KECA, 9:30 to 9:45 a. m. Subject, When You Have a Cold.

Pacific Coast Society of Obstetrics and Gynecology. The annual meeting of the Pacific Coast Society of Obstetrics and Gynecology will be held in Portland, Oregon, October 19, 20, and 21, 1933. An interesting program of operative clinics and scientific papers is to be presented.

Dr. Albert Mathieu of Portland, Oregon, is the president of the society, Dr. Lyle G. McNeile of Los Angeles is president-elect, and Dr. Clarence A. De Puy, 230 Grand Avenue, Oakland, is secretary.

* County societies giving medical broadcasts are requested to send information as soon as arranged (giving station, day, date and hour, and subject) to CALIFORNIA AND WESTERN MEDICINE, 450 Sutter Street, San Francisco, for inclusion in this column.

Modern Knowledge of Cancer Set as Radio Talk

Title.—A discussion of the nature and treatment of cancer is being arranged by the Medical School of the University of California began in August. The cancer programs will be broadcast at 3:45 p. m. on Fridays from August 4 to September 29, inclusive, over KPO, San Francisco; KECA, Los Angeles; and KFSD, San Diego.

Interstate Postgraduate Session at Cleveland.*

The International Assembly of the Interstate Postgraduate Medical Association of North America will be held in the Public Auditorium, Cleveland, Ohio, October 16 to 20, 1933. Many distinguished teachers and clinicians will appear on the program. All members of the California Medical Association are cordially invited to attend. Registration fee of \$5 admits all members of the profession in good standing.

University of California Child Welfare Work Saved by Gift of \$17,235 from East.—Fears for the research program of the University of California Institute of Child Welfare, which was seriously threatened by the legislative budget cut, were temporarily allayed by the receipt of an emergency grant of \$17,235 for the year 1933-1934 from the General Education Board of New York.

Announcement of this timely gift was made by President Robert Gordon Sproul, following its acceptance by the regents of the University.

The Child Welfare emergency fund was one of forty gifts of money, books, art treasures, and teaching equipment reported by the regents. The total amount of funds received for the month exceeded \$40,000.

Typographical Correction.—In the article on "The Physician's Interest in the Making of a Will" by Hartley F. Peart, Esq. (July CALIFORNIA AND WESTERN MEDICINE, pages 20 and 21), one paragraph, as there printed, stated "three-fifths." This was in error, and should have read "four-fifths," to make the meaning clear. In other words, only one of the two-fifths referred to is subject to the will, and the will is also applied to the remaining three-fifths, that is, in all to four-fifths of the estate.

Inactive Duty Training for United States Army Medical Department Reserve Officers.—The medicomilitary course of inactive duty training for Medical Department Reserve officers, which has been held at the Mayo Clinic during the past four years, will again be held this year from October 1 to 14, both dates, inclusive. The inactive duty training will follow the plan so well worked out under the auspices of Colonel George A. Skinner, and the military features will be under his personal supervision.

This type of military medical training is now well established, and has proved its worth during the past four years. The course offers valuable and interesting training for the Medical Department officers of all the components of our national defense. The staff and faculty of the Mayo Clinic have again placed their unexcelled facilities at the service of their gov-

* A major list of the names of the contributors to the program, with other information, appears on page 31, advertising section of this journal.

ernment in the interest of preparedness, and have extended an invitation to all the services to participate.

This short course is equally applicable to general practitioners and specialists. The morning hours are devoted to purely professional subjects selected by the student officers. The afternoon hours pertain solely to medico-military subjects, and the evening hours are covered in a lyceum course of general interest.

Application for this course of inactive duty training should be made to the Corps Area Surgeon, Seventh Corps Area, Omaha, Nebraska. Applications should state the character of the work the candidate desires to follow in the morning hours. All student officers are expected to attend and participate in the afternoon and evening sessions. Each applicant should fully understand that the invitation to accept this course of study without charge is extended by the Mayo Clinic; that the project is without expense to the Government; and that one hundred hours' credit will be given those who take and complete the course. While it is desirable to attend the entire course, those whose time will not permit this may join or leave at any time and will receive credit for the hours spent in training. Uniforms are optional.

CALIFORNIA'S CLINIC LAW *

Assembly Bill No. 1277, Chapter 756—Approved by Governor James Rolph, Jr., June 5, 1933

The title of the above referred to clinic law states that the Act provides "for the issuance and revocation of such permits (to operate clinics) by the State Board of Public Health." It therefore became incumbent upon the State Health Board to study the measure. In order to avoid complications, the board instructed its director to send to the Attorney General of California some questions in which information was requested on certain sections of Assembly Bill No. 1277. Since much publicity has been given to this new law, the reply of Attorney General Webb is here printed for the information of members of the California Medical Association who are on the staffs of, or who are interested in clinics. Attorney General Webb's letter follows:

San Francisco, August 18, 1933.

Hon. Giles S. Porter,
Director, Department of Public Health,
312 State Building,
San Francisco, California.

Dear Sir:

In your communication of the 29th of June, 1933, you refer to Chapter 756 of the Statutes of 1933, better known as the "Clinic Law," and ask the advice of this office concerning a number of sections thereof.

Your first four questions pertain to what are and what are not clinics under Section 1 of the Act.

In answering these questions, I first direct your attention to the fact that there are two classes of clinics defined by that section. The first class of clinic (Clause A) is a "place, establishment or institution maintained, conducted and operated" "for the purpose of furnishing at such place, establishment or institution" "advice, diagnosis, treatment, medicine, drugs, appliances or apparatus to persons" "afflicted with bodily and/or mental diseases or injuries." To come within the terms of such classification and therefore be subject to regulation, a clinic must be operated "under the name or title of clinic or dispensary, or health center, or any other words or phrases of like or similar import"; but in this connection it is my opinion that any words or phrases which convey to the public the thought that the concern is equipped to, and does, render advice, diagnosis or treatment to, or prescribes or administers medicines or drugs for or to, or maintains appliances or apparatus for the special use of, persons afflicted with bodily and/or mental diseases or injuries, would constitute a name or title sufficient to bring the concern within that requirement of the statute. Furthermore, I am of the opinion that such name or title need not be the sole or main name or title of the concern, but it is sufficient if such words or phrases are used in conjunction with or in advertising the main name or title of the concern. The question to be asked is not, is a particular name used, but does the concern propose to render any of the services mentioned to persons afflicted with bodily and/or mental diseases or injuries, and does the name, title or publicity of such

concern reveal that purpose. That this was the intent of the Legislature is made evident by the further provision that concerns fall within such classification whether operated "independently or in connection with any other purpose."

The second classification (Clause B) consists of those "places, establishments or institutions maintained, conducted and operated" "for the purpose of advising and informing persons of means and measures to prevent or avoid disease or injury." As to this second class of clinics, it is immaterial under what title or name the venture is conducted.

1. An ordinary drug store, unless it holds itself out to give preventative advice, under clause "b," or unless it uses the name clinic, dispensary, health center, or the like, as hereinbefore explained, and makes a practice of furnishing advice, diagnosis, treatment, medicines, drugs, appliances or apparatus to persons "afflicted with bodily and/or mental diseases or injuries," does not come within the terms of the Act, and is not subject to regulation thereunder.

2. A concern which sells braces, artificial limbs, exercising machines and the like, does not come within either definition of a clinic, if it proposes to do no more than to sell such things, or to maintain them for the uncontrolled use of persons desiring to use them. If, on the other hand, it holds itself out to diagnose the ailments of, or to give treatments to, or to control the use of such appliances or apparatus by, persons afflicted with bodily and/or mental diseases or injuries, or to give advice and information as to means or measures to prevent or avoid disease or injury, then such concern is a "clinic," as defined by the statute, and is subject to regulation.

The sale of such mechanical equipment by a drug store would not constitute a drug store a "clinic"; but, if the drug store held itself out to render the additional services heretofore mentioned, such drug store would be a "clinic."

3. Under clause "b" there is no specific requirement that there be personal contact between the clinic and the persons to whom advice is given. However, I am of the opinion that such a requirement is implied, first, by reason of the fact that it must be some place, establishment or institution "maintained, conducted and operated" to constitute a "clinic"; second, because the Legislature has used the terms "dispensary" and "health center" as closely related in meaning with the term "clinic"; and, third, because the five classes into which all clinics are divided by Section 3 of the Act, all contemplate that the persons to be treated or advised shall come to such place, establishment or institution for treatment or advice. From these circumstances, I draw the further deduction that the advice and information specified in clause "b" of Section 1 was intended to mean advice and information given to individuals as applicable to them and their particular ailments and conditions, and not advice and information which would be applicable, generally, to all types and classes of people. For example, I do not believe that the Legislature regarded the publication of a magazine dealing principally with matters of hygiene, sanitation, physical culture, right thinking, or the like, to be or constitute a "clinic." Nor do I think that the radio broadcasting of lectures on such subjects would constitute either a broadcasting company or the lecturer a "clinic." Similarly, the publication of health columns in a newspaper does not bring the newspaper under the Act. That these conclusions are correct is made evident by the fact that such broadcasting of information to the public at large (no fee being paid by the individuals who receive such information) falls under no one of the five classes into which all clinics are divided by Section 3 of the Act.

4. A place may be any place, a doorway, or a street corner. All that is required is that, by repetition, it be maintained.

5. Your next question concerns what is a "nominal charge" as the term is used in Section 3 (a) of the Act.

There is no legal definition of that term in the Act, and the question is one of fact. The word "nominal," alone, is legally defined to mean not real or substantial. I would say that under Section 3 (a) a nominal charge is ordinarily one which is relatively insufficient to defray the cost of rendering the service or advice. However, in this connection, as the term "nominal charge" is used in Section 3 (a), in conjunction with the clause "on account of administrative costs if approved by the Director of Public Health . . ." it would seem that any charge made to defray administrative costs, if approved by the director, would be a "nominal charge" within the meaning of that section and for the purpose of applying its provisions.

6. Calling my attention to Section 3 (b) of the Act, and more particularly to the clause "and supported in whole or in part by any trust, donation, bequest or foundation," you ask how large such trust, donation, bequest or foundation would have to be. My answer is that such question is one of fact, upon which the State Board of Health would have to rule. In any event, the trust, donation, bequest or foundation would have to be a substantial one; that is, it would have to supply a substantial part of the operating expenses of the particular institution. The larger the institution, the larger the trust, donation, bequest or foundation would have to be in order to bring that institution within the classification mentioned. Except in a case of abuse of discretion, the determination of the board would control.

7. Your next question pertains to Section 3 (c) of the Act. You wish to know whether a clinic maintained by an employer would have to be operated solely for clinical services to be rendered to its employees or whether it

* See also this number of CALIFORNIA AND WESTERN MEDICINE, page 204, for editorial comments.

would remain within the classification of "employer's clinic" if it rendered such services to the members of the families of the employees of the concern operating it.

The term used by the Legislature is "employees only." That term is positive and leaves no room for construction. Consequently, I am of the opinion that to fall under the classification "employer's clinic," a clinic must be operated and maintained solely for the purpose of rendering clinical services to these persons who are, in fact, employees of the concern operating and maintaining such clinic.

Undesigned and isolated instances of treatment to persons who were not employees would not be sufficient to deprive an "employer's clinic" of its status of such. But if such clinic was deliberately and intentionally organized and maintained to render services to non-employees, as well as to employees, it would cease to be an "employer's clinic." Indeed, it would cease to be entitled to operate as a clinic at all, for it would fall under no one of the five categories into which all clinics are divided by the Act, and yet it would fall within the general definition of clinic as contained in Section 1. That it could be neither a charitable nor a private pay clinic is made evident by Section 4 of the Act.

However, if an employer wished to provide clinical services to its employees and to the members of their families as well, it could do so by contract with a private pay clinic. In such case, however, the clinic could not be conducted, operated and maintained by the employer; it would have to be conducted, operated and maintained by one or more persons licensed to practice one or more of the healing arts as specified in Section 4. Furthermore, the clinic would have to be licensed by your board.

8. You next call my attention to the fact that practically every clinic charges a fee for advice, diagnosis, treatment or service, or for drugs, medicines, appliances or apparatus, and you wish to know whether this fact would not bring every clinic under the classification of "private pay clinic."

My answer is that it would not. Charitable clinics are authorized to make nominal charges. A teaching or research clinic is not prohibited from making charges. The only limitation of that character placed upon an employer's clinic is that it be operated without profit to the employer. Section 3 (d) of the Act must be read in conjunction with those other provisions, and when so read, it is apparent that the Legislature intended a private pay clinic to be one which was operated for the purpose of profit.

9. Your next question reads as follows:

"Under Section 4, a question arises concerning any clinic or hospital organization, or association, be it conducted by individuals, mutual cooperative, or corporation, and which furnishes healing arts services and/or medical supplies to individuals who pay on a monthly or other regular periodic basis. Does such an organization come within the scope of this law?"

"A goodly number of such hospital associations are not operated by persons licensed by the State of California to practice medicine or surgery or dentistry or osteopathy or chiropractic or drugless healing."

I assume that what you wish to know is whether a clinic, supported by monthly or other regular periodical contributions by a number of persons and maintained for the benefit of those persons, is a private pay clinic, as defined by the Act, and therefore must be maintained and operated by persons duly licensed to practice medicine, surgery, osteopathy, chiropractic or drugless healing.

It is my opinion that a clinic so supported, and maintained for such purpose, would either be a private pay clinic or a clinic forbidden by law to operate, depending upon who controlled its functions. Section 4 of the Act prohibits a corporation from conducting, operating and maintaining a private pay clinic. Of consequence, a private pay clinic could not be under the control of stockholders, officers or directors of a corporation as such. Nor could it be conducted, operated and maintained by the elected representatives of a group of laymen, for in that case the laymen would be the principals conducting, operating and maintaining the clinic, which is forbidden by the statute. But one or more persons licensed to practice one or more of the healing arts, as specified in Section 4, could organize and, having organized, could conduct, operate and maintain such a clinic and could contract with laymen, either individually or collectively, to furnish them clinical services either on the fee basis or on the periodical payment basis, provided, of course, that the laws of the state pertaining to insurance were not violated.

10. At the beginning of Section 5 of the Act, and again at the end of that section, certain clinics are exempted from applying for and obtaining permits to operate as such. The clinics enumerated in the first exception are not identical with the clinics enumerated in the second exception. You wish to know which one of these exceptions should be followed by your department. My answer is that your department should follow both of them, and should not require clinics falling under either exception to apply for or secure permits.

11. Your next question pertains to Section 6. You direct my attention to the fact that upon a permit being applied for, it becomes the duty of the Director of Public Health to make an investigation, and that among other things it is the duty of the director to determine whether there is need for such a clinic in the community in which it is proposed to be maintained.

It is further provided that if the director finds that the establishment or continued maintenance of such clinic is

for the benefit of the public health he shall so report to the State Board of Public Health, and the board shall issue such permit or cause such permit to be issued.

The section makes no provision as to what shall be done by the board in the event the director makes no report or makes an unfavorable report. It is provided, however, that in the event a permit is not issued within three months after the filing of the application therefor, the board must state the grounds and reasons for such refusal and furnish a copy thereof to the applicant.

You wish to know whether such provisions empower the board to limit the number of clinics in any locality. You give as an example an instance where ten clinics are operated in a given community and the board determines that five are sufficient, and you wish to know whether the board has the power to require five of such clinics to go out of business.

In answer to such question, it is my opinion that Section 6 of the Act does not make the action of the board dependent upon the report of the director except where the report is favorable. The director is only required to render a report where it is favorable, whereas the board is required to make a statement of the grounds for the refusal to issue a permit where one applied for is not issued.

From these considerations I am of the view that where the report of the director is unfavorable, or where the director renders no report, the burden is cast upon the board to determine whether or not the application for a permit should be granted, and that, in the event it decides that the permit should not be granted, it must assign specific grounds for its refusal. Where the board refuses to issue a permit applied for, the aggrieved parties may have a court of competent jurisdiction review the board's action, and, upon such review, it would be the duty of the court to determine whether the grounds assigned for the refusal to grant the permit were legally sufficient. Should the sole ground for the denial of such application be that there were too many clinics in the community and that it was thought desirable to reduce their number, I am of the opinion that the court would hold that the reason assigned for the refusal to grant the permit was insufficient.

12. Your next question is whether governmental clinics are exempt from the paying of the annual license fee, and whether such clinics are exempt from filing annual applications for permits.

Section 9 exempts all governmental clinics from the payment of license fees. However, such clinics are not exempted from the requirement that they secure annual licenses, except clinics and dispensaries of the United States of America, or of any department, official or agency thereof (See Section 5.) Consequently, clinics of the State of California, of any political subdivision thereof, and of any city, city and county, district, or municipality, are required to apply for and obtain permits.

13. You next ask whether city or county health departments which maintain a number of clinics in different sections of the city or county must secure separate permits for each clinic, or whether one permit will be sufficient to cover all clinics operated in the area.

It is my opinion that a separate permit must be secured for each clinic. (See subdivision "c" of Section 3.)

You next wish to know which clinics are exempt from applying for permits and which are exempt from paying the annual license fee.

It is my opinion that (1) United States Government clinics, (2) employer's clinics, and (3) research clinics working under nonprofit foundation and registered with the United States Government for tax exemption, are exempt from applying for permits to operate as clinics. Those classes of clinics are likewise exempted from the payment of the annual license fee. (See Section 5.) In addition thereto, all other governmental clinics are exempted from the payment of the annual license fee. (See Section 9.)

15. Your next question pertains to the license fee to be charged.

Section 9 provides in part that the annual permit fee shall be "in the sum of not less than five dollars and not more than twenty-five dollars," but makes no provision as to who is to determine what fee is to be charged and collected. By reason of this omission, I am of the opinion that the board is required to charge a flat fee of five dollars. That is the minimum fee specified by the Legislature, and at least that much must be charged. On the other hand, no one is given authority to fix a larger fee and of consequence a larger fee cannot be exacted.

16. In answer to your next question, it is my opinion that a clinic which is not a part of a regularly established hospital wholly or partially maintained by an employer for the purpose of furnishing his or its employees with medical or surgical examination or treatment, does not fall within the exception contained in Section 14, and unless excepted by other provisions of the Act, must apply for and obtain a permit to operate.

17. It is my opinion that groups of laymen who meet periodically to discuss with each other how to keep physically fit are not clinics.

18. In answer to your last question, it is my opinion that public health nurses and sanitary inspectors employed by governmental health departments, whether federal, state, county or municipal, are governmental health officers within the purview of Section 1, Clause "b" of the Act.

Very truly yours,

U. S. WEBB, Attorney General.
By LIONEL BROWNE, Deputy.

TWENTY-FIVE YEARS AGO*

EXCERPTS FROM OUR STATE MEDICAL JOURNAL

Vol. VI, No. 9, September, 1908

From some Editorial Notes.

A Good Example.—Elsewhere we print a circular letter which went to all the members of the South Carolina Association, in their journal, and it is well worth your careful consideration. Do not the same conditions apply to your own journal? There is no earthly reason why reputable manufacturers whose products we use should not support your own journal if they do any advertising at all. . . .

Family Addition.—*Journal of the Oklahoma Medical Association.*—And now comes the newest of our states—Oklahoma—bearing gifts and olive branches in its hands and presents to the family of state medical organization journals our youngest born. With June is issued Volume I, Number 1, of the *Journal of the Oklahoma State Medical Association*.

From an article on "On the Relation of Anticyclonic Weather to the Prevalence of La Grippe and Pneumonia on the Northern Hemisphere, With Special Reference to Recent Epidemics of Pneumonia in Chicago and San Francisco" by C. M. Richter, M.D., San Francisco.

It is the presence of the Pacific Ocean and the westerly direction of the winds that insures high winter and cooler summer temperatures for San Francisco. . . .

It will impress you deeply when you study this second chart before you, giving the even temperature and humidity line for San Francisco for every day of the eleven years, 1888 to 1899, in contrast to the lines of pneumonia mortality and air pressure. . . .

From an article on "When Is Gonorrhea Cured?" by John C. Spencer, M.D., San Francisco.

It is a simple answer to the question, "When is gonorrhea cured?" to say offhand, "When the gonococci have disappeared from, or are no longer demonstrable in the patient's secretions."

Upon this bald statement, however, depends a responsibility that is second to none in the entire realm of medicine; one that calls for the highest degree of patient and painstaking perseverance and diagnostic technique. So much depends on our dictum in the pronouncement of a final cure of this social curse that the responsibility almost appalls. . . .

From an article on "Seborrhea and Its Sequelae" by Ernest Dwight Chipman, M.D., San Francisco.

Possibly no disease of the skin is considered more banal and innocuous than seborrhea; and yet a large number of the cases seen by dermatologists are of definite seborrheic nature or in some way are related to what may be called the seborrheic state.

From an article on "Clinical Features of Influenza Since the Pandemic of 1889-1890" by Herbert C. Moffitt, M.D., San Francisco.

When the kind invitation from your committee came to me a short time since to read a paper upon opsonic work and bacteriotherapy, it was accepted without due consideration. It needed little reflection to demonstrate that my personal experience has been as yet entirely too meager to admit of a paper of any value. We all too hastily try to assimilate and in-

* This column strives to mirror the work and aims of colleagues who bore the brunt of society work some twenty-five years ago. It is hoped that such presentation will be of interest to both old and new members.

(Continued in Advertising Section, Page 17)

BOARD OF MEDICAL EXAMINERS OF THE STATE OF CALIFORNIA*

By CHARLES B. PINKHAM, M. D.

Secretary-Treasurer

News Items

"George Harvey is in the County Jail (Oroville, California), following arrest at the Western Pacific depot as an accused narcotic racketeer. Harvey is said to have signed the name of a railroad employee to a note asking a local doctor to pass drugs to him for delivery to the railroad head, wanting them for an ill person on the train" (*Sacramento Bee*, August 15, 1933). We hope this is the individual concerning whom a warning was published in August "News Items."

"The lure of dark eyelashes . . . a few drops of mysterious fluid . . . blindness or disfigurement—such is the true life story which today impelled the Board of Medical Examiners to launch a determined drive against purveyors of dangerous beauty concoctions. Doctor Pinkham, secretary of the board, revealed a series of pitiful stories of women who would be more beautiful and instead were disfigured for life. One girl in San Francisco submitted to having her eyelashes dyed. The liquid seeped into her eyes, and in a couple of days she was blind. Another woman, a beauty parlor operator, agreed to have a couple of lash-dye salesmen demonstrate their solution on her. Her face was badly disfigured, and the salesmen disappeared. Their business address in Hollywood proved fictitious. 'It is a serious thing,' stated Doctor Pinkham, 'for anyone to use a solution of unknown content around the eyes. Some of them contain aniline derivatives, and may either cause blindness or serious dermatitis.' He has suggested to the State Board of Cosmetology that it issue an order prohibiting licentiates from using potent liquids around the eyes. The cooperation of all affected state boards is being sought to drive out all fake beauty experts who have taken a heavy toll of beauty and sometimes of life" (*Sacramento Bee*, August 17, 1933). *The Journal of the American Medical Association* July 29, 1933, page 363, reported at least five severe cases of conjuncto-dermatitis following the use of a certain eyelash dye, manufactured in Los Angeles.

"What price beauty? The answer was to be found today in records of the Wallach-Aeberli-White manslaughter trial resulting from the death of Mrs. Aleen Farnum during a face-peeling operation. How the subject was 'put to sleep' and layer upon layer of strange drug mysteries applied to her face, was revealed in a detailed description of face rejuvenation methods. . . . As related before the coroner's jury, and alleged by the prosecution at the trial, 'patients' were given sedative capsules the night before the beauty treatment to 'quiet their nerves.' On the date of the 'face peel' another capsule and a hypodermic are administered, the latter assertedly by Dr. I. A. Wallach, a young neighborhood physician. . . ." (*Los Angeles Record*, July 14, 1933.) (Previous entry, August "News Items.")

"Christmas E. White and Miss Anna Aeberli, recently freed from manslaughter charges in connection with the death of Mrs. Aleen Farnum, following a beauty operation, today were under orders to leave California. Municipal Judge Ben Scheinman of Los Angeles gave the pair a suspended sentence of six months each and placed them on two years' probation after they appeared before him and pleaded guilty to

* The office addresses of the California State Board of Medical Examiners are printed in the roster on advertising page 6.

(Continued in Advertising Section, Page 18)